ORDER NO. MAC0111069C0

Service Manual

AIR CONDITIONER

HIDE AWAY TYPE

HEAT PUMP MODEL

CS-A24BD3P (CU-A24BBP5)
CS-A28BD3P (CU-A28BBP5, CU-A28BBP8)
CS-A34BD3P (CU-A34BBP5, CU-A34BBP8)
CS-A43BD3P (CU-A43BBP8)
CS-A50BD3P (CU-A50BBP8)

COOLING ONLY MODEL

CS-A24BD3P (CU-C24BBP5)
CS-A28BD3P (CU-C28BBP5, CU-C28BBP8)
CS-A34BD3P (CU-C34BBP5, CU-C34BBP8)
CS-A43BD3P (CU-C43BBP8)
CS-A50BD3P (CU-C50BBP8)

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic

⚠ PRECAUTION OF LOW TEMPERATURE

In order to avoid frostbite, be assured of no refrigerant leakage during the installation or repairing of refrigeration circuit.

1. SERVICE INFORMATION

Notice of Address setting for NEW Cassette / NEW Outdoor Unit.

The new Ceiling / New Outdoor models are possible to have address setting for twin / triple control or group control by automatic when main power supply is switched on.
(Manual address setting is also possible by using Dip switch on Indoor unit P.C. board.)
However, this address setting is only possible when made proper wiring connection and also Indoor unit should be original virgin unit.

1.1. Example of trouble at test operation

If found out as following phenomenon at test operation on site, it may have possibility of wrong address setting. / Therefore, please ensure of the address setting.

1. **LCD display of wired remote control had not illuminate although the main power supply switch is 'on'.**
2. **LCD display had indicated as normal illumination when power supply switch is 'on', however outdoor unit cannot be operated. / (But, it is necessary to take 3 to 5 minutes for outdoor unit to start from the timing of remote control ON/OFF switch is 'on'.)**
3. **P.C. board had memorized wrong setting information.**
   - **A. If main power supply is switched 'on' with the wrong connection.**
   - **B. When changing the connection or combination of units due to re-installation etc.**

     - When changing the system from twin to triple (triple to twin).
     - When changing the system from group control to normal one to one system.
     - When making the replacement of units as master and slave etc.

1.2. Caution of test operation

Do not touch the remote control switch and do not change any wirings for one minute when the main power supply switch is 'on'. / (Because the unit is having automatic address setting during the first one minute.)

1.3. Caution during automatic address setting

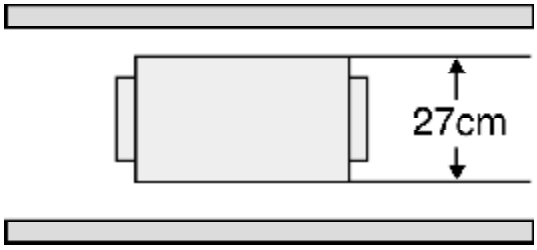
When main power supply switch is 'on', the P.C. board will automatically memorized the connecting system. / Consequently, when initial power supply is 'on', there will not be interchangeability of units even of the same type and same capacity unit. Therefore unable to connect the unit to another system.

2. FEATURES

2.1. Variety of excellent features /

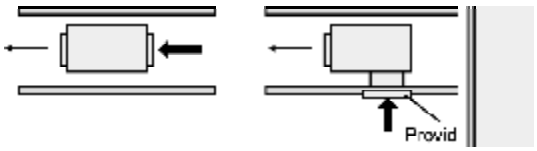
2.1.1. Compact design, height 27 cm

- The height has been reduced to 27 cm (for 2.5HP to 6.0HP), the equipment can be installed in limited spaces.

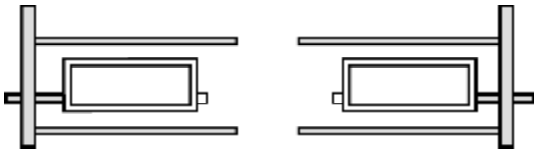


2.1.2. Versatile installation

- The indoor unit is designed in order that air will also enter from below, for easier installation under different conditions.

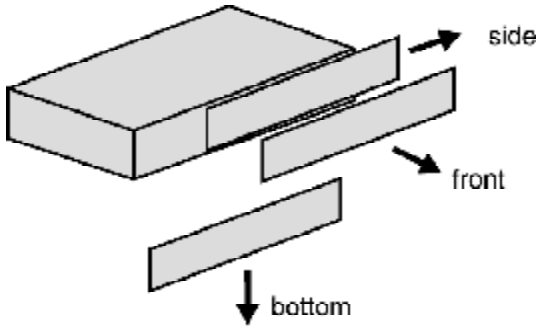


- The equipment has two drain outlets on the right and left side for adoption to the installation conditions in the building.



2.1.3. Easy maintenance

- Equipped with a filter as standard. The filter can be removed in three directions for easier maintenance.



2.1.4. Static pressure selection

- The static pressure is selectable; 5mmAq or 7mmAq. The static pressure can be selected according to the condition of the duct.

2.1.5. Quiet operation

- The sound level is as low as 40db (A) for 2.5 HP and 3.0 HP. The models is ideal for installation in offices, shop and houses where quiet operation is important.

2.1.6. Auto fan mode operation

- Auto fan mode is added to existing modes Hi, Me and Lo. It aotomatically adjusts the fan speed according to the indoor temperature.

2.1.7. Dry mode function

- Dry mode can make a comfortable indoor environment during wet season.

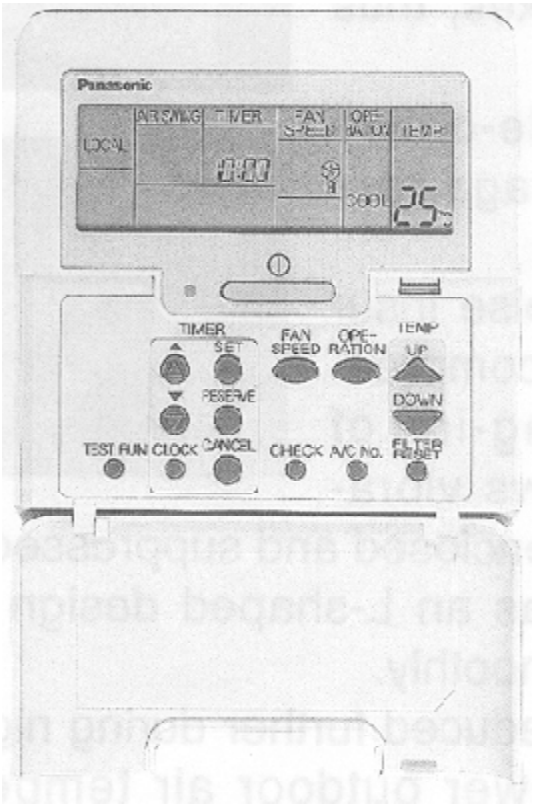
2.1.8. Automatic changeover function (heat pump models)

- The unit automatically switches between cooling and heating in accordance with operating load in order to maintain a confortable indoor temperature.

2.1.9. Common design for Indoor unit and Remote Control

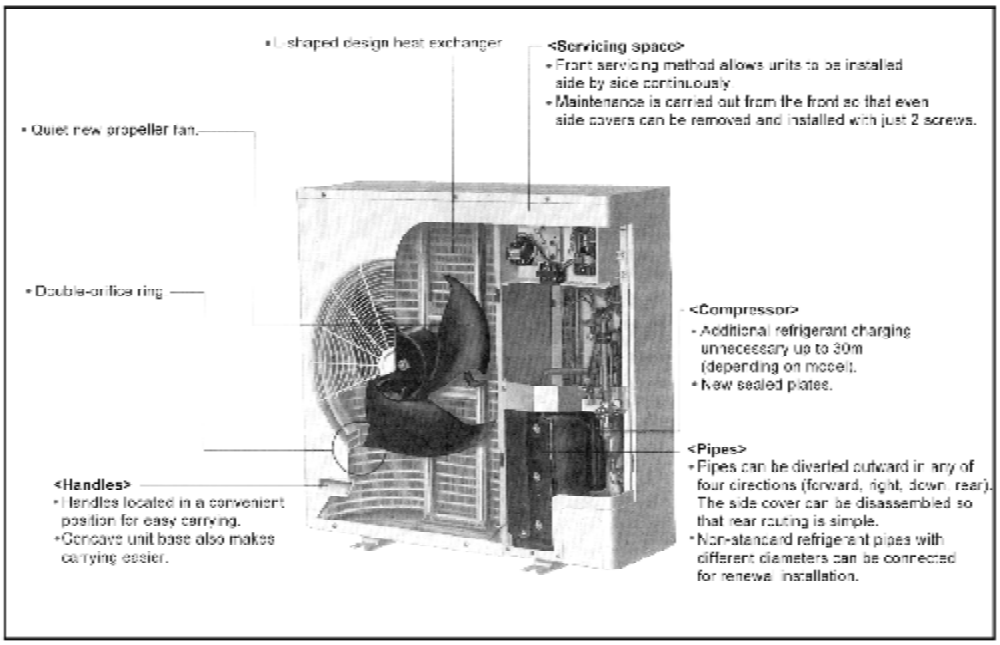
- The indoor unit and the wire remote control are design as a common specification between Cooling only and Heat Pump models.

2.1.10. Wired Remote Control



- **The new design includes an easily -visible red pilot lamp. / The power can be turned on and off at a single touch, without opening the cover.**
- **A built-in thermistor, allowing indoor temperature detection in accordance with indoor conditions by switching with main unit thermistor.**
- **Twin non-polar wires make installation work easy, (10 m cable supplied as accessories)**

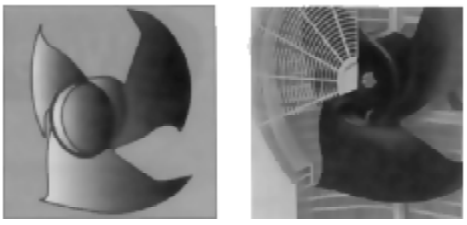
2.2. New low-noise outdoor units


• L-shaped design heat exchanger
<Servicing space>
• Front servicing method allows units to be installed side by side continuously
• Maintenance is carried out from the front so that even side covers can be removed and installed with just 2 screws.
• Quiet new propeller fan.
• Double-orifice ring
<Compressor>
- Additional refrigerant charging unnecessary up to 30m (depending on model).
• New sealed plates.
<Pipes>
• Pipes can be diverted outward in any of four directions (forward, right, down, rear). The side cover can be disassembled so that rear routing is simple.
• Non-standard refrigerant pipes with different diameters can be connected for renewal installation.
<Handles>
• Handles located in a convenient position for easy carrying.
• Concave unit base also makes carrying easier.

[Product features]

2.2.1. Low-noise design improves in surrounding areas

1. **The noise-suppressing winglet fan is a result of new research into vane design theory. The unique curved shape suppresses the generation of vortexes, thus reduces air flow noise.**



2. **The adoption of double-orifice rings reduces air passage resistance.**
3. **Strengthening of the noise insulation materials in the compressor and the sealing-in of mechanical noise allows vibration noise to be greatly enclosed and suppressed.**
4. **The heat exchanger has an L-shaped design to allow air to flow more smoothly.**
5. **Noise is automatically reduced further during night time operation with lower outdoor air temperatures.**

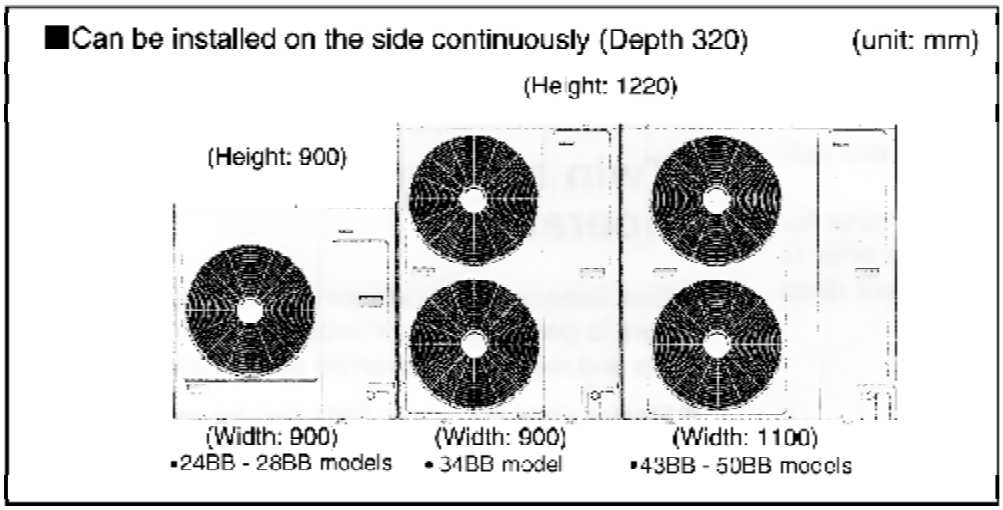
2.2.2. Automatic restart function

When the electric power resumes after a power failure, the unit will automatically restarts the operation in the pre-failure mode.

2.2.3. Low ambient cooling operation

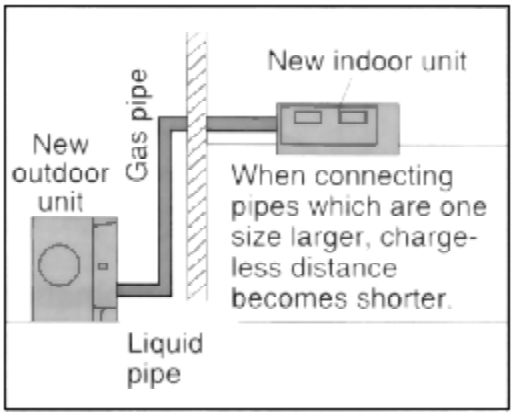
Cooling operation is possible at outdoor temperature of -5~C.

2.3. Greatly improved workability increases system renewal capability



2.3.1. Pipes that are one size larger can also be connected for renewal

- If renewing the system, existing refrigerant pipes can be utilized so that only the indoor units need to be replaced.


New indoor unit
Gas pipe
New outdoor unit
When connecting pipes which are one size larger, charge-less distance becomes shorter.
Liquid pipe

- For example, liquid and gas pipes from 10 years ago can be connected to current pipes with the same size for one size larger. Effective utilization of materials reduces working time and trouble. (Adaptor sockets are not supplied.)

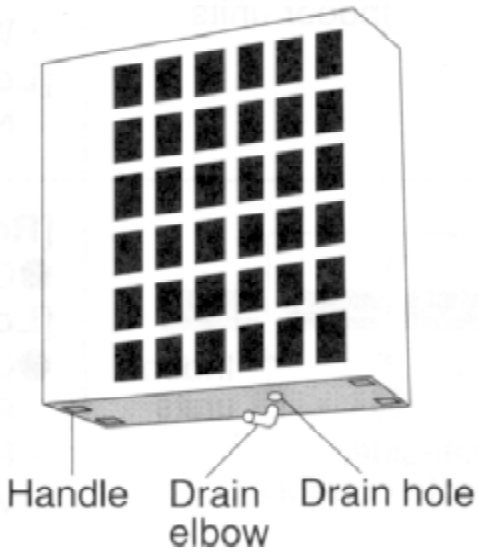
2.3.2. Additional refrigerant charging unnecessary for 30 m

- All models do not require any additional charging of refrigerant for

30 m of pipe length. This makes installation much easier.

2.3.3. Drain water dripping-prevention structure

- The base of the outdoor unit is provided with a single drain hole in order to prevent drain water from leaking out of the unit. Body connecting a drain elbow and a discharge pipe, water leakages can be prevented even when the unit is installed against a wall.



2.3.4. Space saving design allows units to be installed side by side continuously

- Servicing after installation can be carried out by removing the front covers.

2.3.5. Easy test operation

- Test operation can be carried out for both indoor and outdoor units.

2.3.6. Long pipe design

Max piping length: 50 (m)	24BB~50BB
Height difference/ equivalent pipe length	30/50

2.3.7. Internal pipe connection

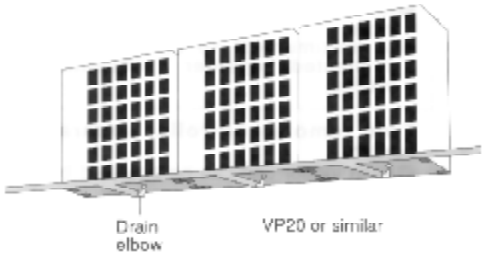
- Pipes are connected inside the units (inside the side covers), making the final appearance more attractive.
- Pipes can be diverted outward in any of four directions (forward, right, down, rear).
- Small liquid pipe diameters of 9.52mm for 43BB and 50BB models,

making installation work much easier.

■ **Liquid-side pipe diameters (mm) : 9.52 (43BB~50BB / models)**

2.3.8. Centralized draining method

- Even when multiple outdoor units are installed to a wall, the drain outlets can be concentrated into a single drain pipe. This makes installation easier and also improve appearance.



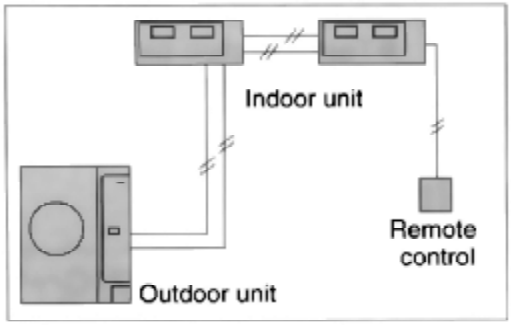
2.4. A brand-new control method using the latest in technology

2.4.1. Power supply wiring is also easier

Power supply wiring and other wiring tasks can be carried out more easily.

- Twin non-polar wires used to connect indoor and outdoor units.

- Adoption of connection error prevention circuits for drives wires and signal wires. If a connection error is made, the relay does not operate and current does not flow to the circuit boards.



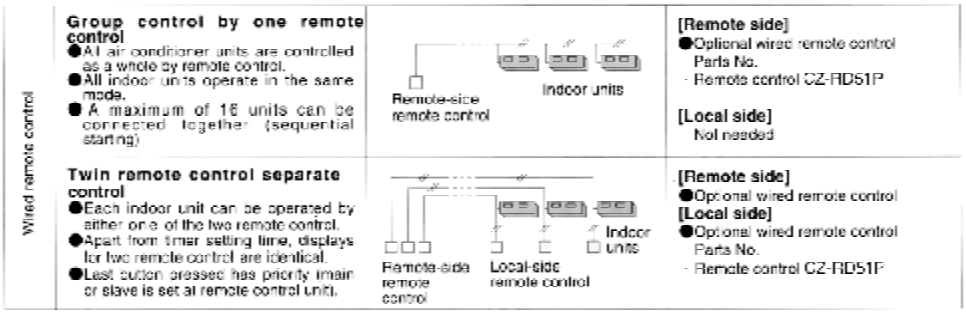
2.4.2. Separate indoor/outdoor unit power supplies

The power supply can be connected to (1) just the outdoor units, or (2) to both indoor and outdoor units.

2.4.3. Automatic setting initialization function (Remote control and Indoor unit)

In accordance with the indoor and outdoor units connected and the connection methods, conditions such as the configuration (twin or triple format) and remote-control functions such as cooling only or heat pump model are automatically detected and set instantly.

2.4.4. Group control equipment

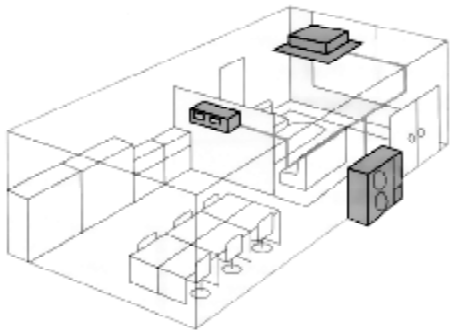

Wired remote control
Group control by one remote control
●All air conditioner units are controlled as a whole by remote control.
●All indoor units operate in the same mode.
●A maximum of 16 units can be connected together (sequential starting)
Remote-side remote control
Indoor units
[Remote side]
●Optional wired remote control
Parts No.
· Remote control CZ-RD51P
[Local side]
Not needed
Twin remote control separate control
●Each indoor unit can be operated by either one of the two remote control.
●Apart from timer setting time, displays for two remote control are identical.
●Last button pressed has priority (main or slave is set at remote control unit).
Remote-side remote control
Local-side remote control
Indoor units
[Remote side]
●Optional wired remote control
[Local side]
●Optional wired remote control
Parts No.
· Remote control CZ-RD51P

2.4.5. Twin and Triple operation

- Simultaneous air conditioning of wide spaces and corners is possible. Indoor units of different horsepowers and models can even be used in combination.

- Master unit and slave-units can be set automatically in twin and triple systems. No address setting is necessary.

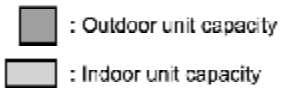
- Multiple indoor units can be operated simultaneously with a single remote control. Note that individual operation is not possible.



■ **Twin and Triple combination table**

-

Outdoor unit	Simultaneous twin operation		Simultaneous triple operation	
	Standard	Horsepower difference	Standard	Horsepower difference
3.0 HP	3.0 → 1.5 / 1.5			
4.0 HP	4.0 → 2.0 / 2.0	4.0 → 1.5 / 2.5		
5.0 HP	5.0 → 2.5 / 2.5	5.0 → 2.0 / 3.0		
6.0 HP	6.0 → 3.0 / 3.0	6.0 → 2.0 / 4.0	6.0 → 2.0 / 2.0 / 2.0	6.0 → 1.5 / 1.5 / 3.0



3. SPECIFICATION (HEAT PUMP TYPE)

3.1 CS-A24BD3P / CU-A24BBP5

ITEM / MODEL				Indoor Unit	Outdoor unit
			Main Body	CS-A24BD3P	CU-A24BBP5
Cooling Capacity			kW (BTU/h)	6.50 (22,200)	
Heating Capacity			kW (BTU/h)	7.10 (24,200)	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Medium and Low Speed			m3/min cfm	Hi 20 Hi 706	Hi 43 1518
External Static Pressure			mmAq Pa	Hi 5 Me 4 Lo 3 Hi 49 Me 39 Lo 29	-
Air Inlet				Backward Suction	Rear sided Sucti
Air Outlet				Front blow-out	Front blow-out
Outside Dimension (H x W x D)			mm	270 x (1000 + 100) x 650	900 x 900 x 320
Net Weight			kg (lbs)	40 (88)	80 (176)
Piping Connection	Refrigerant	Gas	mm (inch)	O.D Ø 15.88 (5/8) Flared Type	
		Liquid	mm (inch)	O.D Ø 6.35 (1/4) Flared Type	
	Drain		mm	Female screw RC1 (PT1)	I.DØ 20 x 1

Compressor	Type, Number of Set			-	Hermetic-1 (Rotary
	Starting Method			-	Direct on-line star
	Motor	Type		-	2-pole single pha induction moto
		Input	kW	-	Cool/Heat 2.31/2.
		Rated Output	kW	-	1.9
Fan	Type, Number of Set			Sirocco fan-2	Prop. fan-1
	Air Volume Control			Three-Step and Auto mode (Remote Control)	-
	Motor	Type		4-pole single phase induction motor	6-pole single pha induction moto
		Input	kW	0.15	0.11
		Rated Output	kW	0.085	0.05
Air-heat Exchanger				Louvre-fin type	Louvre-fin type
Refrigerant Control				Capillary tube	Capillary tube
Refrigerant Oil (Charged)			L	-	MS32 (1.3)
Refrigerant (Charged)			kg (oz)	-	R-22 2.5 (88)
Running Adjustment	Control Switch			Wired Remote Control	-
	Room Temperature			Thermostat (Main Body)	-
Safety Devices				Internal protector for compressor, Internal thermost F.M, Crankcase heater, High pressure switch, Cur Transformer	
Noise Level (Sound Pressure)			dB (A)	Hi 35 Lo 35	Cooling 50, Heatin

1. **Cooling capacities are based on indoor temp. 27°C D.B (80.6°F D.B.), 19.0°C W.B. (66.2°F W.B.) and outdoor air temp. 35°C D.B. (95°F D.B.), 24°C W.B. (75.2°F W.B.)**
2. **Heating capacities are based on indoor temp. 20° CD.B (68.0° FD.B.) and outdoor air temp. 7°C D.B. (44.6°F D.B.), 6°C W.B. (42.8°F D.B.)**

ELECTRICAL DATA (50Hz)

MODEL / ITEM			CS-A24BD3P/CU-A24BBP5		
			Condition by JIS B 8616		
Volts	V		220	230	240
Phase			Single	Single	Single
Input Power	kW	Cool	2.59	2.59	2.59
		Heat	2.50	2.50	2.50
Running Current	A	Cool	12.1	11.9	11.6
		Heat	11.5	11.2	11.3
Starting Current	A		49	51	52
Power Factor	%	Cool	97	95	93
		Heat	99	97	92
*Power Factor means total figure of compressor, indoor fan motor and outdoor fan motor.					
Panasonic	Power source		AC, 1~220V, 230V, 240V 50Hz		

3.2 CS-A28BD3P / CU-A28BBP5

ITEM / MODEL				Indoor Unit	Outdoor unit
			Main Body	CS-A28BD3P	CU-A28BBP5
Cooling Capacity			kW (BTU/h)	7.30 (24,900)	
Heating Capacity			kW (BTU/h)	7.75 (26,400)	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Medium and Low Speed			m3/min cfm	Hi 25 Hi 883	Hi 43 1518
External Static Pressure			mmAq Pa	Hi 5 Me 4 Lo 3 Hi 49 Me 39 Lo 29	-
Air Inlet				Backward Suction	Rear sided Sucti
Air Outlet				Front blow-out	Front blow-out
Outside Dimension (H x W x D)			mm	270 x (1000 + 100) x 650	900 x 900 x 320
Net Weight			kg (lbs)	40 (88)	82 (181)
Piping Connection	Refrigerant	Gas	mm (inch)	O.D Ø 15.88 (5/8) Flared Type	
		Liquid	mm (inch)	O.D Ø 9.52 (3/8) Flared Type	
	Drain		mm	Female screw RC1 (PT1)	I.DØ 20 x 1
Compressor	Type, Number of Set			-	Hermetic-1 (Rotary
	Starting Method			-	Direct on-line star
	Motor	Type		-	2-pole single pha induction moto
		Input	kW	-	Cool/Heat 2.49/2.
		Rated Output	kW	-	2.0

Fan	Type, Number of Set			Sirocco fan-2	Prop. fan-1
	Air Volume Control			Three-Step and Auto mode (Remote Control)	-
	Motor	Type		4-pole single phase induction motor	6-pole single pha induction moto
		Input	kW	0.19	0.11
		Rated Output	kW	0.115	0.05
Air-heat Exchanger				Louvre-fin type	Louvre-fin type
Refrigerant Control				Capillary tube	Capillary tube
Refrigerant Oil (Charged)			L	-	MS32 (1.3)
Refrigerant (Charged)			kg (oz)	-	R-22 3.8 (134)
Running Adjustment	Control Switch			Wired Remote Control	-
	Room Temperature			Thermostat (Main Body)	-
Safety Devices				Internal protector for compressor, Internal thermost F.M, Crankcase heater, High pressure switch, Cur Transformer	
Noise Level (Sound Pressure)			dB (A)	Hi 42 Lo 38	50

1. **Cooling capacities are based on indoor temp. 27°C D.B (80.6°F D.B.), 19.0°C W.B. (66.2°F W.B.) and outdoor air temp. 35°C D.B. (95°F D.B.), 24°C W.B. (75.2°F W.B.)**
2. **Heating capacities are based on indoor temp. 20° CD.B (68.0° FD.B.) and outdoor air temp. 7°C D.B. (44.6°F D.B.), 6°C W.B. (42.8°F D.B.)**

ELECTRICAL DATA (50Hz)

MODEL / ITEM			CS-A28BD3P/CU-A28BBP5		
			Condition by JIS B 8616		
Volts	V		220	230	240
Phase			Single	Single	Single
Input Power	kW	Cool	2.69	2.69	2.69
		Heat	2.61	2.61	2.61
Running Current	A	Cool	12.3	11.8	11.6
		Heat	12.4	11.5	11.2
Starting Current	A		50	52	54
Power Factor	%	Cool	99	99	97
		Heat	96	99	97
*Power Factor means total figure of compressor, indoor fan motor and outdoor fan motor.					
Panasonic	Power source		AC, 1~220V, 230V, 240V 50Hz		

3.3 CS-A28BD3P / CU-A28BBP8

ITEM / MODEL				Indoor Unit	Outdoor unit
			Main Body	CS-A28BD3P	CU-A28BBP8
Cooling Capacity			kW (BTU/h)	7.30 (24,900)	
Heating Capacity			kW (BTU/h)	7.75 (26,400)	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Medium and Low Speed			m3/min cfm	Hi 25 Hi 883	Hi 43 1518
External Static Pressure			mmAq Pa	Hi 5 Me 4 Lo 3 Hi 49 Me 39 Lo 29	-
Air Inlet				Backward Suction	Rear sided Sucti
Air Outlet				Front blow-out	Front blow-out
Outside Dimension (H x W x D)			mm	270 x (1000 + 100) x 650	900 x 900 x 320
Net Weight			kg (lbs)	40 (88)	82 (181)
Piping Connection	Refrigerant	Gas	mm (inch)	O.D Ø 15.88 (5/8) Flared Type	
		Liquid	mm (inch)	O.D Ø 9.52 (3/8) Flared Type	
	Drain		mm	Female screw RC1 (PT1)	I.DØ 20 x 1
Compressor	Type, Number of Set			-	Hermetic-1 (Rotary
	Starting Method			-	Direct on-line star
	Motor	Type		-	2-pole single pha induction moto
		Input	kW	-	Cool/Heat 2.49/2.
		Rated Output	kW	-	2.0
Fan	Type, Number of Set			Sirocco fan-2	Prop. fan-1
	Air Volume Control			Three-Step and Auto mode (Remote Control)	-
	Motor	Type		4-pole single phase induction motor	6-pole single pha induction moto
		Input	kW	0.19	0.11
		Rated Output	kW	0.115	0.05
Air-heat Exchanger				Louvre-fin type	Louvre-fin type
Refrigerant Control				Capillary tube	Capillary tube
Refrigerant Oil (Charged)			L	-	MS32 (1.3)
Refrigerant (Charged)			kg (oz)	-	R-22 3.8 (134)
Running Adjustment	Control Switch			Wired Remote Control	-
	Room Temperature			Thermostat (Main Body)	-
Safety Devices				Head Thermostat for compressor, Internal thermost F.M, Crankcase heater, High pressure switch, Cur Transformer	
Noise Level (Sound Pressure)			dB (A)	Hi 42 Lo 38	50

1. **Cooling capacities are based on indoor temp. 27°C D.B (80.6°F D.B.), 19.0°C W.B. (66.2°F W.B.) and outdoor air temp. 35°C D.B. (95°F D.B.), 24°C W.B. (75.2°F W.B.)**
2. **Heating capacities are based on indoor temp. 20° CD.B (68.0° FD.B.) and outdoor air temp. 7°C D.B. (44.6°F D.B.), 6°C W.B. (42.8°F D.B.)**

ELECTRICAL DATA (50Hz)

MODEL / ITEM			CS-A28BD3P, CU-A28BBP8		
			Condition by JIS B 8616		
Volts	V		380	400	415
Phase			3N	3N	3N
Input Power	kW	Cool	2.69	2.69	2.69
		Heat	2.40	2.40	2.40
Running Current	A	Cool	4.8	4.6	4.6
		Heat	4.1	4.1	4.1
Starting Current	A		28	29	30
Power Factor	%	Cool	85	84	81
		Heat	89	84	81
*Power Factor means total figure of compressor, indoor fan motor and outdoor fan motor.					
Panasonic	Power source		AC, 3N~380V, 400V, 415V 50Hz		

3.4 CS-A34BD3P / CU-A34BBP5

ITEM / MODEL				Indoor Unit	Outdoor unit
			Main Body	CS-A34BD3P	CU-A34BBP5
Cooling Capacity			kW (BTU/h)	10.45 (35,600)	
Heating Capacity			kW (BTU/h)	11.20 (38,200)	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Medium and Low Speed			m3/min cfm	Hi 35 Hi 1236	Hi 70 2471
External Static Pressure			mmAq Pa	Hi 5 Me 4 Lo 3 Hi 49 Me 39 Lo 29	-
Air Inlet				Backward Suction	Rear sided Sucti
Air Outlet				Front blow-out	Front blow-out
Outside Dimension (H x W x D)			mm	270 x (1500 + 100) x 650	1220 x 900 x 32
Net Weight			kg (lbs)	54 (119)	97 (214)
Piping Connection	Refrigerant	Gas	mm (inch)	O.D Ø 19.05 (3/4) Flared Type	
		Liquid	mm (inch)	O.D Ø 9.52 (3/8) Flared Type	
	Drain		mm	Female screw RC1 (PT1)	I.DØ 20 x 1
Compressor	Type, Number of Set			-	Hermetic-1 (Scroll
	Starting Method			-	Direct on-line star
	Motor	Type		-	2-pole single pha induction moto
		Input	kW	-	Cool/Heat 3.23/3.
		Rated Output	kW	-	2.92
Fan	Type, Number of Set			Sirocco fan-3	Prop. fan-2
	Air Volume Control			Three-Step and Auto mode (Remote Control)	-
	Motor	Type		4-pole single phase induction motor	6-pole single pha induction moto
		Input	kW	0.22	0.24
		Rated Output	kW	0.25	0.05 x 2
Air-heat Exchanger				Louvre-fin type	Louvre-fin type
Refrigerant Control				Capillary tube	Capillary tube
Refrigerant Oil (Charged)			L	-	SONTEX 200LT (1
Refrigerant (Charged)			kg (oz)	-	R-22 4.2 (148)
Running Adjustment	Control Switch			Wired Remote Control	-
	Room Temperature			Thermostat (Main Body)	-
Safety Devices				Internal protector for compressor, Internal thermost F.M, Crankcase heater, High pressure switch, Curr Transformer	
Noise Level (Sound Pressure)			dB (A)	Hi 43 Lo 40	Cooling 55, Heatin

1. Cooling capacities are based on indoor temp. 27°C D.B (80.6°F

D.B.), 19.0°C W.B. (66.2°F W.B.) and outdoor air temp. 35°C D.B. (95°F D.B.), 24°C W.B. (75.2°F W.B.)

2. Heating capacities are based on indoor temp. 20° CD.B (68.0° FD.B.) and outdoor air temp. 7°C D.B. (44.6°F D.B.), 6°C W.B. (42.8°F D.B.)

ELECTRICAL DATA (50Hz)

MODEL / ITEM			CS-A34BD3P/CU-A34BBP5		
			Condition by JIS B 8616		
Volts	V		220	230	240
Phase			Single	Single	Single
Input Power	kW	Cool	3.95	3.95	3.95
		Heat	3.55	3.55	3.55
Running Current	A	Cool	19.0	19.1	19.2
		Heat	17.9	18.0	18.1
Starting Current	A		94	99	103
Power Factor	%	Cool	94	90	86
		Heat	90	86	82
*Power Factor means total figure of compressor, indoor fan motor and outdoor fan motor.					
Panasonic	Power source		AC, 1~220V, 230V, 240V 50Hz		

3.5 CS-A34BD3P / CU-A34BBP8

ITEM / MODEL				Indoor Unit	Outdoor unit
			Main Body	CS-A34BD3P	CU-A34BBP8
Cooling Capacity			kW (BTU/h)	10.45 (35,600)	
Heating Capacity			kW (BTU/h)	11.20 (38,200)	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Medium and Low Speed			m3/min cfm	Hi 35 Hi 1236	Hi 70 2471
External Static Pressure			mmAq Pa	Hi 5 Me 4 Lo 3 Hi 49 Me 39 Lo 29	-
Air Inlet				Backward Suction	Rear sided Sucti
Air Outlet				Front blow-out	Front blow-out
Outside Dimension (H x W x D)			mm	270 x (1500 + 100) x 650	1220 x 900 x 32
Net Weight			kg (lbs)	54 (119)	97 (214)
Piping Connection	Refrigerant	Gas	mm (inch)	O.D Ø 19.05 (3/4) Flared Type	
		Liquid	mm (inch)	O.D Ø 9.52 (3/8) Flared Type	
	Drain		mm	Female screw RC1 (PT1)	I.DØ 20 x 1

Compressor	Type, Number of Set			-	Hermetic-1 (Scroll
	Starting Method			-	Direct on-line star
	Motor	Type		-	2-pole single pha induction moto
		Input	kW	-	Cool/Heat 2.93/3.
		Rated Output	kW	-	2.8
Fan	Type, Number of Set			Sirocco fan-3	Prop. fan-2
	Air Volume Control			Three-Step and Auto mode (Remote Control)	-
	Motor	Type		4-pole single phase induction motor	6-pole single pha induction moto
		Input	kW	0.22	0.24
		Rated Output	kW	0.25	0.05 x 2
Air-heat Exchanger				Louvre-fin type	Louvre-fin type
Refrigerant Control				Capillary tube	Capillary tube
Refrigerant Oil (Charged)			L	-	SONTEX 200LT (1
Refrigerant (Charged)			kg (oz)	-	R-22 4.2 (148)
Running Adjustment	Control Switch			Wired Remote Control	-
	Room Temperature			Thermostat (Main Body)	-
Safety Devices				Internal protector for compressor, Internal thermost F.M, Crankcase heater, High pressure switch, Curr Transformer	
Noise Level (Sound Pressure)			dB (A)	Hi 43 Lo 40	Cooling 55, Heatin

1. Cooling capacities are based on indoor temp. 27°C D.B (80.6°F D.B.), 19.0°C W.B. (66.2°F W.B.) and outdoor air temp. 35°C D.B. (95°F D.B.), 24°C W.B. (75.2°F W.B.)
2. Heating capacities are based on indoor temp. 20° CD.B (68.0° FD.B.) and outdoor air temp. 7°C D.B. (44.6°F D.B.), 6°C W.B. (42.8°F D.B.)

ELECTRICAL DATA (50Hz)

MODEL / ITEM			CS-A34BD3P/CU-A34BBP8		
			Condition by JIS B 8616		
Volts	V		380	400	415
Phase			3N	3N	3N
Input Power	kW	Cool	3.65	3.65	3.65
		Heat	3.40	3.40	3.40
Running Current	A	Cool	6.5	6.5	6.5
		Heat	5.8	5.8	5.8
Starting Current	A		39	41	42
Power Factor	%	Cool	85	81	78
		Heat	89	85	82
*Power Factor means total figure of compressor, indoor fan motor and outdoor fan motor.					
Panasonic	Power source		AC, 3N~380V, 400V, 415V 50Hz		

3.6 CS-A43BD3P / CU-A43BBP8

ITEM / MODEL				Indoor Unit	Outdoor unit
			Main Body	CS-A43BD3P	CU-A43BBP8
Cooling Capacity			kW (BTU/h)	13.00 (44,300)	
Heating Capacity			kW (BTU/h)	14.20 (48,400)	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Medium and Low Speed			m3/min cfm	Hi 40 Hi 1413	Hi 82 2895
External Static Pressure			mmAq Pa	Hi 5 Me 4 Lo 3 Hi 49 Me 39 Lo 29	-
Air Inlet				Backward Suction	Rear sided Sucti
Air Outlet				Front blow-out	Front blow-out
Outside Dimension (H x W x D)			mm	270 x (1500 + 100) x 650	1220 x 1100 x 32
Net Weight			kg (lbs)	55 (121)	114 (251)
Piping Connection	Refrigerant	Gas	mm (inch)	O.D Ø 19.05 (3/4) Flared Type	
		Liquid	mm (inch)	O.D Ø 9.52 (3/8) Flared Type	
	Drain		mm	Female screw RC1 (PT1)	I.DØ 20 x 1
Compressor	Type, Number of Set			-	Hermetic-1 (Scroll
	Starting Method			-	Direct on-line star
	Motor	Type		-	2-pole 3 phase indu motor
		Input	kW	-	Cool/Heat 3.85/3.
		Rated Output	kW	-	3.54

Fan	Type, Number of Set			Sirocco fan-4	Prop. fan-2
	Air Volume Control			Three-Step and Auto mode (Remote Control)	-
	Motor	Type		4-pole single phase induction motor	6-pole single pha induction moto
		Input	kW	0.26	0.23
		Rated Output	kW	0.35	0.055 x 2
Air-heat Exchanger				Louvre-fin type	Louvre-fin type
Refrigerant Control				Capillary tube	Capillary tube
Refrigerant Oil (Charged)			L	-	SONTEX 200LT (2
Refrigerant (Charged)			kg (oz)	-	R-22 5.2 (183)
Running Adjustment	Control Switch			Wired Remote Control	-
	Room Temperature			Thermostat (Main Body)	-
Safety Devices				Internal protector for compressor, Internal thermost F.M, Crankcase heater, High pressure switch, Curr Transformer	
Noise Level (Sound Pressure)			dB (A)	Hi 44 Lo 41	Cooling 55, Heatin

1. **Cooling capacities are based on indoor temp. 27°C D.B (80.6°F D.B.), 19.0°C W.B. (66.2°F W.B.) and outdoor air temp. 35°C D.B. (95°F D.B.), 24°C W.B. (75.2°F W.B.)**
2. **Heating capacities are based on indoor temp. 20° CD.B (68.0° FD.B.) and outdoor air temp. 7°C D.B. (44.6°F D.B.), 6°C W.B. (42.8°F D.B.)**

ELECTRICAL DATA (50Hz)

MODEL / ITEM			CS-A43BD3P/CU-A43BBP8		
			Condition by JIS B 8616		
Volts	V		380	400	415
Phase			3N	3N	3N
Input Power	kW	Cool	4.53	4.53	4.53
		Heat	3.90	3.90	3.90
Running Current	A	Cool	7.5	7.5	7.5
		Heat	6.1	6.1	6.1
Starting Current	A		58	58	58
Power Factor	%	Cool	92	87	84
		Heat	97	92	89
*Power Factor means total figure of compressor, indoor fan motor and outdoor fan motor.					
Panasonic	Power source		AC, 3N~380V, 400V, 415V 50Hz		

3.7 CS-A50BD3P / CU-A50BBP8

ITEM / MODEL				Indoor Unit	Outdoor unit
			Main Body	CS-A50BD3P	CU-A50BBP8
Cooling Capacity			kW (BTU/h)	14.50 (49,400)	
Heating Capacity			kW (BTU/h)	15.70 (53,500)	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Medium and Low Speed			m3/min cfm	Hi 45 Hi 1589	Hi 86 3036
External Static Pressure			mmAq Pa	Hi 5 Me 4 Lo 3 Hi 49 Me 39 Lo 29	-
Air Inlet				Backward Suction	Rear sided Sucti
Air Outlet				Front blow-out	Front blow-out
Outside Dimension (H x W x D)			mm	270 x (1500 + 100) x 650	1220 x 1100 x 32
Net Weight			kg (lbs)	56 (123)	116 (256)
Piping Connection	Refrigerant	Gas	mm (inch)	O.D Ø 19.05 (3/4) Flared Type	
		Liquid	mm (inch)	O.D Ø 9.52 (3/8) Flared Type	
	Drain		mm	Female screw RC1 (PT1)	I.DØ 20 x 1
Compressor	Type, Number of Set			-	Hermetic-1 (Scroll
	Starting Method			-	Direct on-line star
	Motor	Type		-	2-pole 3-phase indu motor
		Input	kW	-	Cool/Heat 4.56/4.
		Rated Output	kW	-	4.1
Fan	Type, Number of Set			Sirocco fan-4	Prop. fan-2
	Air Volume Control			Three-Step and Auto mode (Remote Control)	-
	Motor	Type		4-pole single phase induction motor	6-pole single pha induction moto
		Input	kW	0.30	0.25
		Rated Output	kW	0.20	0.055X2
Air-heat Exchanger				Louvre-fin type	Louvre-fin type
Refrigerant Control				Capillary tube	Capillary tube
Refrigerant Oil (Charged)			L	-	SONTEX 200LT (2
Refrigerant (Charged)			kg (oz)	-	R-22 5.0 (176)
Running Adjustment	Control Switch			Wired Remote Control	-
	Room Temperature			Thermostat (Main Body)	-
Safety Devices				Internal protector for compressor, Internal thermost F.M, Crankcase heater, High pressure switch, Curr Transformer	
Noise Level (Sound Pressure)			dB (A)	Hi 45 Lo 42	Cooling 56, Heatin

1. **Cooling capacities are based on indoor temp. 27°C D.B (80.6°F D.B.), 19.0°C W.B. (66.2°F W.B.) and outdoor air temp. 35°C D.B. (95°F D.B.), 24°C W.B. (75.2°F W.B.)**
2. **Heating capacities are based on indoor temp. 20° CD.B (68.0° FD.B.) and outdoor air temp. 7°C D.B. (44.6°F D.B.), 6°C W.B. (42.8°F D.B.)**

ELECTRICAL DATA (50Hz)

MODEL / ITEM			CS-A50BD3P/CU-A50BBP8		
			Condition by JIS B 8616		
Volts	V		380	400	415
Phase			3N	3N	3N
Input Power	kW	Cool	5.10	5.10	5.10
		Heat	5.09	5.09	5.09
Running Current	A	Cool	8.8	8.8	8.8
		Heat	8.8	8.8	8.8
Starting Current	A		69	69	69
Power Factor	%	Cool	88	84	81
		Heat	88	83	80
*Power Factor means total figure of compressor, indoor fan motor and outdoor fan motor.					
Panasonic	Power source		AC, 3N~380V, 400V, 415V 50Hz		

4. SPECIFICATION (COOLING ONLY TYPE)

4.1 CS-A24BD3P / CU-C24BBP5

ITEM / MODEL				Indoor Unit	Outdoor unit
			Main Body	CS-A24BD3P	CU-C24BBP5
Cooling Capacity			kW (BTU/h)	6.50 (22,200)	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Medium and Low Speed			m3/min cfm	Hi 18 Hi 636	Hi 43 1518
External Static Pressure			mmAq Pa	Hi 5 Me 4 Lo 3 Hi 49 Me 39 Lo 29	-
Air Inlet				Backward Suction	Rear sided Suctio
Air Outlet				Front blow-out	Front blow-out
Outside Dimension (H x W x D)			mm	270 x (1000 + 100) x 650	900 x 900 x 320
Net Weight			kg (lbs)	40 (88)	80 (176)
Piping Connection	Refrigerant	Gas	mm (inch)	O.D Ø 15.88 (5/8) Flared Type	
		Liquid	mm (inch)	O.D Ø 6.35 (1/4) Flared Type	
	Drain		mm	Female screw RC1 (PT1)	I.DØ 20 x 1
Compressor	Type, Number of Set			-	Hermetic-1 (Rotary)
	Starting Method			-	Direct on-line starti
	Motor	Type		-	2-pole single phas induction motor
		Input	kW	-	Cool/2.31
		Rated Output	kW	-	1.9
Fan	Type, Number of Set			Sirocco fan-2	Prop. fan-1
	Air Volume Control			Three-Step and Auto mode (Remote Control)	-
	Motor	Type		4-pole single phase induction motor	6-pole single phas induction motor
		Input	kW	0.15	0.11
		Rated Output	kW	0.15	0.05
Air-heat exchanger				Louvre-fin type	Louvre-fin type
Refrigerant Control				Capillary tube	Capillary tube
Refrigerant oil (Charged)			L	-	MS32 (1.3)
Refrigerant (Charged)			kg (oz)	-	R-22 2.5 (88)
Running Adjustment	Control Switch			Wired Remote Control	-
	Room Temperature			Thermostat (Main Body)	-
Safety Devices				Internal protector for compressor, Internal thermos for F.M, Crankcase heater, High pressure switch Current Transformer	
Noise Level (Sound Pressure)			dB (A)	Hi 40 Lo 35	Hi 50

1. Cooling capacities are based on indoor temp. 27°C D.B. (80.6°F D.B.), 19.0°C W.B. (66.2°F W.B.) and outdoor air temp. 35°C D.B.

(95°F D.B.), 24°C W.B. (75.2°F W.B.) / / / / / /

ELECTRICAL DATA (50Hz)

MODEL / ITEM			CS-A24BD3P/CU-C24BBP5		
			Condition by JIS B 8616		
Volts	V		220	230	240
Phase			Single	Single	Single
Input Power	kW	Cool	2.59	2.59	2.59
Running Current	A	Cool	12.1	11.9	11.6
Starting Current	A		49	51	52
Power Factor	%	Cool	97	95	93
*Power Factor means total figure of compressor, indoor fan motor and outdoor fan motor.					
Panasonic	Power source		AC, 1~220V, 230V, 240V 50Hz		

4.2 CS-A28BD3P / CU-C28BBP5

ITEM / MODEL				Indoor Unit	Outdoor unit
			Main Body	CS-A28BD3P	CU-C28BBP5
Cooling Capacity			kW (BTU/h)	7.30 (24,900)	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Medium and Low Speed			m3/min cfm	Hi 25 Hi 883	Hi 43 1518
External Static Pressure			mmAq Pa	Hi 5 Me 4 Lo 3 Hi 49 Me 39 Lo 29	-
Air Inlet				Backward Suction	Rear sided Suct
Air Outlet				Front blow-out	Front blow-ou
Outside Dimension (H x W x D)			mm	270 x (1000 + 100) x 650	900 x 900 x 32
Net Weight			kg (lbs)	40 (88)	82 (181)
Piping Connection	Refrigerant	Gas	mm (inch)	O.D Ø 15.88 (5/8) Flared Type	
		Liquid	mm (inch)	O.D Ø 9.52 (3/8) Flared Type	
	Drain		mm	Female screw RC1 (PT1)	I.DØ 20 x 1
Compressor	Type, Number of Set			-	Hermetic-1 (Rota
	Starting Method			-	Direct on-line sta
	Motor	Type		-	2-pole single ph induction mot
		Input	kW	-	Cool/2.49
		Rated Output	kW	-	2.0

Fan	Type, Number of Set			Sirocco fan-2	Prop. fan-1
	Air Volume Control			Three-Step and Auto mode (Remote Control)	-
	Motor	Type		4-pole single phase induction motor	6-pole single ph induction mot
		Input	kW	0.19	0.11
		Rated Output	kW	0.115	0.05
Air-heat exchanger				Louvre-fin type	Louvre-fin typ
Refrigerant Control				Capillary tube	Capillary tub
Refrigerant oil (Charged)			L	-	MS32 (1.3)
Refrigerant (Charged)			kg (oz)	-	R-22 3.8 (134
Running Adjustment	Control Switch			Wired Remote Control	-
	Room Temperature			Thermostat (Main Body)	-
Safety Devices				Internal protector for compressor, Internal therm for F.M, Crankcase heater, High pressure swit Current Transformer	
Noise Level (Sound Pressure)			dB (A)	Hi 42 Lo 38	Hi 50

1. Cooling capacities are based on indoor temp. 27°C D.B. (80.6°F D.B.), 19.0°C W.B. (66.2°F W.B.) and outdoor air temp. 35°C D.B. (95°F D.B.), 24°C W.B. (75.2°F W.B.) / / / / / /

ELECTRICAL DATA (50Hz)

MODEL / ITEM			CS-A28BD3P/CU-C28BBP5		
			Condition by JIS B 8616		
Volts	V		220	230	240
Phase			Single	Single	Single
Input Power	kW	Cool	2.69	2.69	2.69
Running Current	A	Cool	12.3	11.8	11.6
Starting Current	A		50	52	54
Power Factor	%	Cool	99	99	97
*Power Factor means total figure of compressor, indoor fan motor and outdoor fan motor.					
Panasonic	Power source		AC, 1~220V, 230V, 240V 50Hz		

4.3 CS-A28BD3P / CU-C28BBP8

ITEM / MODEL				Indoor Unit	Outdoor unit
			Main Body	CS-A28BD3P	CU-C28BBP8
Cooling Capacity			kW (BTU/h)	7.30 (24,900)	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Medium and Low Speed			m3/min cfm	Hi 25 Hi 883	Hi 43 1518
External Static Pressure			mmAq Pa	Hi 5 Me 4 Lo 3 Hi 49 Me 39 Lo 29	-
Air Inlet				Backward Suction	Rear sided Suct
Air Outlet				Front blow-out	Front blow-ou
Outside Dimension (H x W x D)			mm	270 x (1000 + 100) x 650	900 x 900 x 32
Net Weight			kg (lbs)	40 (88)	82 (181)
Piping Connection	Refrigerant	Gas	mm (inch)	O.D Ø 15.88 (5/8) Flared Type	
		Liquid	mm (inch)	O.D Ø 9.52 (3/8) Flared Type	
	Drain		mm	Female screw RC1 (PT1)	I.DØ 20 x 1
Compressor	Type, Number of Set			-	Hermetic-1 (Rota
	Starting Method			-	Direct on-line sta
	Motor	Type		-	2-pole single ph induction mot
		Input	kW	-	Cool/2.49
		Rated Output	kW	-	2.0
Fan	Type, Number of Set			Sirocco fan-2	Prop. fan-1
	Air Volume Control			Three-Step and Auto mode (Remote Control)	-
	Motor	Type		4-pole single phase induction motor	6-pole single ph induction mot
		Input	kW	0.19	0.11
		Rated Output	kW	0.115	0.05
Air-heat exchanger				Louvre-fin type	Louvre-fin typ
Refrigerant Control				Capillary tube	Capillary tub
Refrigerant oil (Charged)			L	-	MS32 (1.3)
Refrigerant (Charged)			kg (oz)	-	R-22 3.8 (134
Running Adjustment	Control Switch			Wired Remote Control	-
	Room Temperature			Thermostat (Main Body)	-
Safety Devices				Heat Thermostat for compressor, Internal thermo F.M, Crankcase heater, High pressure switch, Cu Transformer	
Noise Level			dB (A)	Hi 42 Lo 38	Hi 50

1. Cooling capacities are based on indoor temp. 27°C D.B. (80.6°F D.B.), 19.0°C W.B. (66.2°F W.B.) and outdoor air temp. 35°C D.B.

(95°F D.B.), 24°C W.B. (75.2°F W.B.) / / / / / /

ELECTRICAL DATA (50Hz)

MODEL / ITEM			CS-A28BD3P/CU-C28BBP8		
			Condition by JIS B 8616		
Volts	V		380	400	415
Phase			3N	3N	3N
Input Power	kW	Cool	2.69	2.69	2.69
Running Current	A	Cool	4.8	4.6	4.6
Starting Current	A		28	29	30
Power Factor	%	Cool	85	84	81
*Power Factor means total figure of compressor, indoor fan motor and outdoor fan motor.					
Panasonic	Power source		AC, 3N~380V, 400V, 415V 50Hz		

4.4 CS-A34BD3P / CU-C34BBP5

ITEM / MODEL				Indoor Unit	Outdoor unit
			Main Body	CS-A34BD3P	CU-C34BBP5
Cooling Capacity			kW (BTU/h)	10.45 (35,600)	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Medium and Low Speed			m3/min cfm	Hi 35 Hi 1236	Hi 70 2471
External Static Pressure			mmAq Pa	Hi 5 Me 4 Lo 3 Hi 49 Me 39 Lo 29	-
Air Inlet				Backward Suction	Rear sided Suct
Air Outlet				Front blow-out	Front blow-ou
Outside Dimension (H x W x D)			mm	270 x (1500 + 100) x 650	1220 x 900 x 3
Net Weight			kg (lbs)	54 (119)	97 (214)
Piping Connection	Refrigerant	Gas	mm (inch)	O.D Ø 19.05 (3/4) Flared Type	
		Liquid	mm (inch)	O.D Ø 9.52 (3/8) Flared Type	
	Drain		mm	Female screw RC1 (PT1)	I.DØ 20 x 1
Compressor	Type, Number of Set			-	Hermetic-1 (Scro
	Starting Method			-	Direct on-line sta
	Motor	Type		-	2-pole single ph induction mot
		Input	kW	-	Cool/3.23
		Rated Output	kW	-	2.92

Fan	Type, Number of Set			Sirocco fan-3	Prop. fan-2
	Air Volume Control			Three-Step and Auto mode (Remote Control)	-
	Motor	Type		4-pole single phase induction motor	6-pole single ph induction mot
		Input	kW	0.22	0.24
		Rated Output	kW	0.25	0.05 x 2
Air-heat exchanger				Louvre-fin type	Louvre-fin typ
Refrigerant Control				Capillary tube	Capillary tub
Refrigerant oil (Charged)			L	-	SONTEX 200LT
Refrigerant (Charged)			kg (oz)	-	R-22 4.2 (148
Running Adjustment	Control Switch			Wired Remote Control	-
	Room Temperature			Thermostat (Main Body)	-
Safety Devices				Internal protector for compressor, Internal therm for F.M, Crankcase heater, High pressure swit Current Transformer	
Noise Level (Sound Pressure)			dB (A)	Hi 43 Lo 40	Hi 55

1. Cooling capacities are based on indoor temp. 27°C D.B. (80.6°F D.B.), 19.0°C W.B. (66.2°F W.B.) and outdoor air temp. 35°C D.B. (95°F D.B.), 24°C W.B. (75.2°F W.B.) / / / / / /

ELECTRICAL DATA (50Hz)

MODEL / ITEM			CS-A34BD3P/CU-C34BBP5		
			Condition by JIS B 8616		
Volts	V		220	230	240
Phase			Single	Single	Single
Inpurt Power	kW	Cool	3.95	3.95	3.95
Running Current	A	Cool	19.0	19.0	19.0
Starting Current	A		94	99	103
Power Factor	%	Cool	94	90	87
*Power Factor means total figure of compressor, indoor fan motor and outdoor fan motor.					
Panasonic	Power source		AC, 1~220V, 230V, 240V 50Hz		

4.5 CS-A34BD3P / CU-C34BBP8

ITEM / MODEL				Indoor Unit	Outdoor unit
			Main Body	CS-A34BD3P	CU-C34BBP8
Cooling Capacity			kW (BTU/h)	10.45 (35,600)	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Medium and Low Speed			m3/min cfm	Hi 35 Hi 1236	Hi 70 2471
External Static Pressure			mmAq Pa	Hi 5 Me 4 Lo 3 Hi 49 Me 39 Lo 29	-
Air Inlet				Backward Suction	Rear sided Suct
Air Outlet				Front blow-out	Front blow-ou
Outside Dimension (H x W x D)			mm	270 x (1500 + 100) x 650	1220 x 900 x 3
Net Weight			kg (lbs)	54 (119)	97 (214)
Piping Connection	Refrigerant	Gas	mm (inch)	O.D Ø 19.05 (3/4) Flared Type	
		Liquid	mm (inch)	O.D Ø 9.52 (3/8) Flared Type	
	Drain		mm	Female screw RC1 (PT1)	I.DØ 20 x 1
Compressor	Type, Number of Set			-	Hermetic-1 (Scro
	Starting Method			-	Direct on-line sta
	Motor	Type		-	2-pole single ph induction mot
		Input	kW	-	Cool/2.93
		Rated Output	kW	-	2.8
Fan	Type, Number of Set			Sirocco fan-3	Prop. fan-2
	Air Volume Control			Three-Step and Auto mode (Remote Control)	-
	Motor	Type		4-pole single phase induction motor	6-pole single ph induction mot
		Input	kW	0.22	0.24
		Rated Output	kW	0.25	0.05 x 2
Air-heat exchanger				Louvre-fin type	Louvre-fin typ
Refrigerant Control				Capillary tube	Capillary tub
Refrigerant oil (Charged)			L	-	SONTEX 200LT
Refrigerant (Charged)			kg (oz)	-	R-22 4.2 (148
Running Adjustment	Control Switch			Wired Remote Control	-
	Room Temperature			Thermostat (Main Body)	-
Safety Devices				Internal protector for compressor, Internal therm for F.M, Crankcase heater, High pressure swit Current Transformer	
Noise Level (Sound Pressure)			dB (A)	Hi 43 Lo 40	Hi 55

1. Cooling capacities are based on indoor temp. 27°C D.B. (80.6°F D.B.), 19.0°C W.B. (66.2°F W.B.) and outdoor air temp. 35°C D.B.

(95°F D.B.), 24°C W.B. (75.2°F W.B.) / / / / / /

ELECTRICAL DATA (50Hz)

MODEL / ITEM			CS-A34BD3P/CU-C34BBP8		
			Condition by JIS B 8616		
Volts	V		380	400	415
Phase			3N	3N	3N
Input Power	kW	Cool	3.95	3.95	3.95
Running Current	A	Cool	6.3	6.3	6.3
Starting Current	A		39	41	42
Power Factor	%	Cool	95	91	87
*Power Factor means total figure of compressor, indoor fan motor and outdoor fan motor.					
Panasonic	Power source		AC, 3N~380V, 400V, 415V 50Hz		

4.6 CS-A43BD3P / CU-C43BBP8

ITEM / MODEL				Indoor Unit	Outdoor uni
			Main Body	CS-A43BD3P	CU-C43BBP
Cooling Capacity			kW (BTU/h)	13.00 (44,300)	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Medium and Low Speed			m3/min cfm	Hi 40 Hi 1413	Hi 82 2895
External Static Pressure			mmAq Pa	Hi 5 Me 4 Lo 3 Hi 49 Me 39 Lo 29	-
Air Inlet				Backward Suction	Rear sided Suc
Air Outlet				Front blow-out	Front blow-o
Outside Dimension (H x W x D)			mm	270 x (1500 + 100) x 650	1220 x 1100 x
Net Weight			kg (lbs)	55 (121)	114 (251)
Piping Connection	Refrigerant	Gas	mm (inch)	O.D Ø 19.05 (3/4) Flared Type	
		Liquid	mm (inch)	O.D Ø 9.52 (3/8) Flared Type	
	Drain		mm	Female screw RC1 (PT1)	I.DØ 20 x 1
Compressor	Type, Number of Set			-	Hermetic-1 (Scr
	Starting Method			-	Direct on-line sta
	Motor	Type		-	2-pole 3-phase ind motor
		Input	kW	-	Cool/3.85
		Rated Output	kW	-	3.54

Fan	Type, Number of Set			Sirocco fan-4	Prop. fan-2
	Air Volume Control			Three-Step and Auto mode (Remote Control)	-
	Motor	Type		4-pole single phase induction motor	6-pole single ph induction mot
		Input	kW	0.26	0.23
		Rated Output	kW	0.35	0.055 x 2
Air-heat exchanger				Louvre-fin type	Louvre fin typ
Refrigerant Control				Capillary tube	-
Refrigerant oil (Charged)			L	-	SONTEX200LT
Refrigerant (Charged)			kg (lbs)	-	R-22 5.2 (183
Running Adjustment	Control Switch			Wired Remote Control	-
	Room Temperature			Thermostat (Main Body)	-
Safety Devices				Internal protector for compressor, Internal therm for F.M, Crankcase heater, High pressure swi Current Transformer	
Noise Level (Sound Pressure)			dB (A)	Hi 44 Lo 41	Hi 55

1. Cooling capacities are based on indoor temp. 27°C D.B. (80.6°F D.B.), 19.0°C W.B. (66.2°F W.B.) and outdoor air temp. 35°C D.B. (95°F D.B.), 24°C W.B. (75.2°F W.B.) / / / / / /

ELECTRICAL DATA (50Hz)

MODEL / ITEM			CS-A43BD3P/CU-C43BBP8		
			Condition by JIS B 8616		
Volts	V		380	400	415
Phase			3N	3N	3N
Input Power	kW	Cool	4.53	4.53	4.53
Running Current	A	Cool	7.5	7.5	7.5
Starting Current	A		58	58	58
Power Factor	%	Cool	92	87	84
*Power Factor means total figure of compressor, indoor fan motor and outdoor fan motor.					
Panasonic	Power source		AC, 3N~380V, 400V, 415V 50Hz		

4.7 CS-A50BD3P / CU-C50BBP8

ITEM / MODEL				Indoor Unit	Outdoor uni
			Main Body	CS-A50BD3P	CU-C50BBP
Cooling Capacity			kW (BTU/h)	14.50 (49,400)	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Medium and Low Speed			m3/min cfm	Hi 45 Hi 1589	Hi 86 3036
External Static Pressure			mmAq Pa	Hi 5 Me 4 Lo 3 Hi 49 Me 39 Lo 29	-
Air Inlet				Backward Suction	Rear sided Suc
Air Outlet				Front blow-out	Front blow-o
Outside Dimension (H x W x D)			mm	270 x (1500 + 100) x 650	1220 x 1100 x
Net Weight			kg (lbs)	56 (123)	116 (256)
Piping Connection	Refrigerant	Gas	mm (inch)	O.D Ø 19.05 (3/4) Flared Type	
		Liquid	mm (inch)	O.D Ø 9.52 (3/8) Flared Type	
	Drain		mm	Female screw RC1 (PT1)	I.DØ 20 x 1
Compressor	Type, Number of Set			-	Hermetic-1 (Scr
	Starting Method			-	Direct on-line st
	Motor	Type		-	2-pole 3-phase ind motor
		Input	kW	-	Cool/4.56
		Rated Output	kW	-	4.1
Fan	Type, Number of Set			Sirocco fan-4	Prop. fan-2
	Air Volume Control			Three-Step and Auto mode (Remote Control)	-
	Motor	Type		4-pole single phase induction motor	6-pole single ph induction mot
		Input	kW	0.30	0.25
		Rated Output	kW	0.20	0.055 x 2
Air-heat exchanger				Louvre-fin type	Louvre-fin ty
Refrigerant Control				Capillary tube	-
Refrigerant oil (Charged)			L	-	SONTEX200LT
Refrigerant (Charged)			kg (oz)	-	R-22 5.0 (176
Running Adjustment	Control Switch			Wired Remote Control	-
	Room Temperature			Thermostat (Main Body)	-
Safety Devices				Internal protector for compressor, Internal therm for F.M, Crankcase heater, High pressure swi Current Transformer	
Noise Level (Sound Pressure)			dB (A)	Hi 45 Lo 42	Hi 56

1. Cooling capacities are based on indoor temp. 27°C D.B. (80.6°F

D.B.), 19.0°C W.B. (66.2°F W.B.) and outdoor air temp. 35°C D.B. (95°F D.B.), 24°C W.B. (75.2°F W.B.) / / / / / /

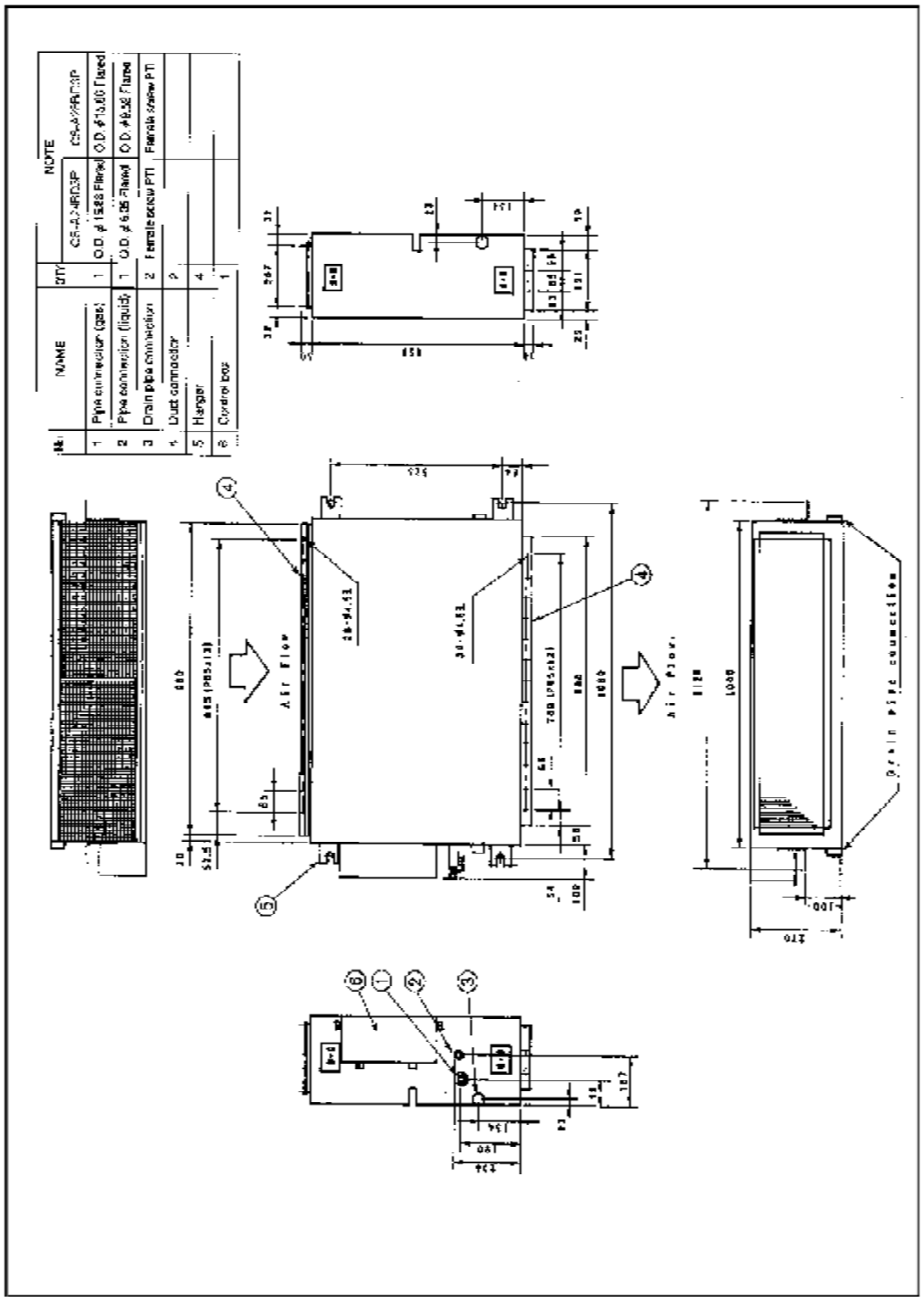
ELECTRICAL DATA (50Hz)

MODEL / ITEM			CS-A50BD3P/CU-C50BBP8		
			Condition by JIS B 8616		
Volts	V		380	400	415
Phase			3N	3N	3N
Input Power	kW	Cool	5.10	5.10	5.10
Running Current	A	Cool	8.8	8.8	8.8
Starting Current	A		69	69	69
Power Factor	%	Cool	88	84	81
*Power Factor means total figure of compressor, indoor fan motor and outdoor fan motor.					
Panasonic	Power source		AC, 3N~380V, 400V, 415V 50Hz		

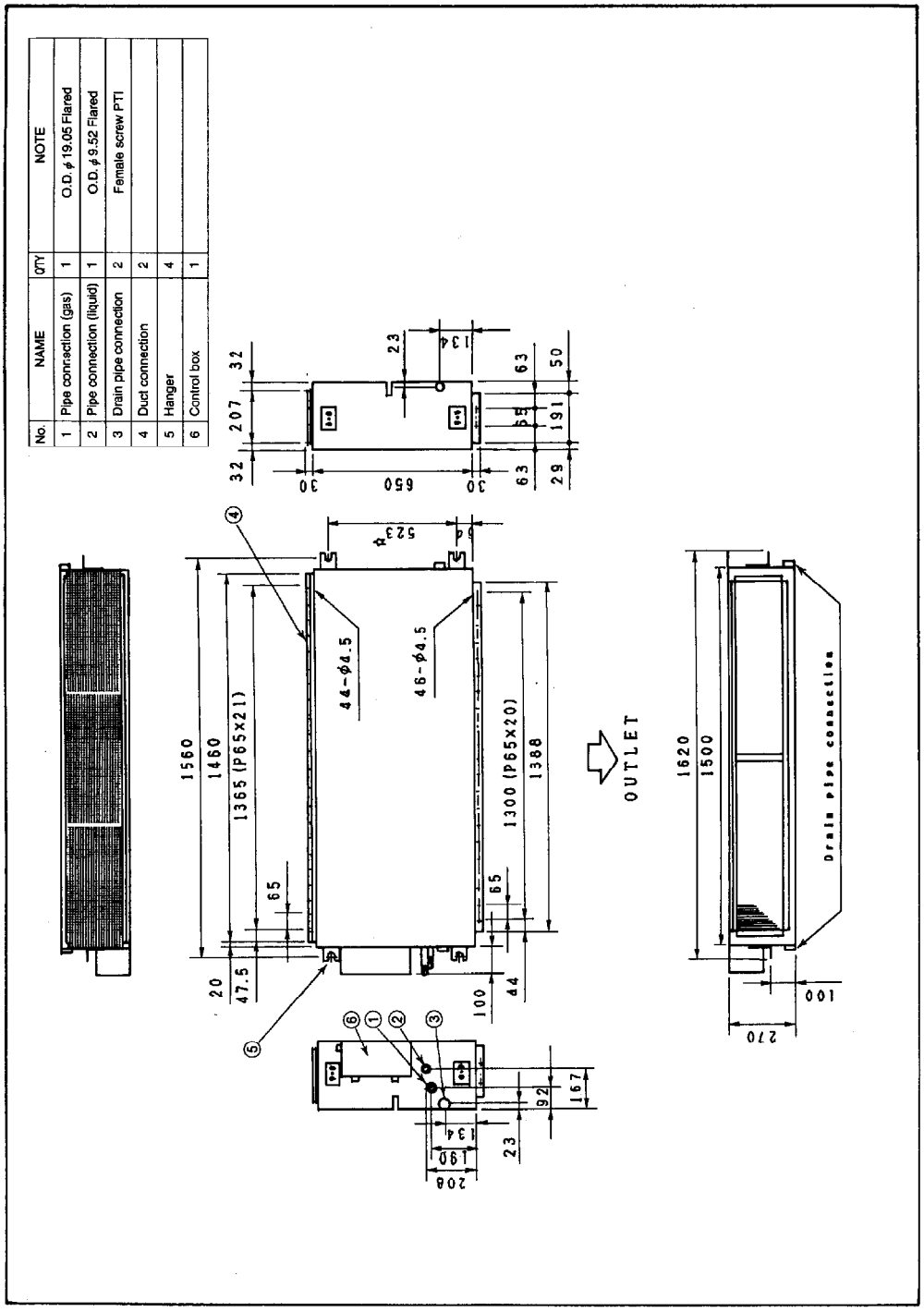
5. TECHNICAL DRAWING

CS-A24BD3P, CS-A28BD3P

OUTSIDE DIMENSIONS

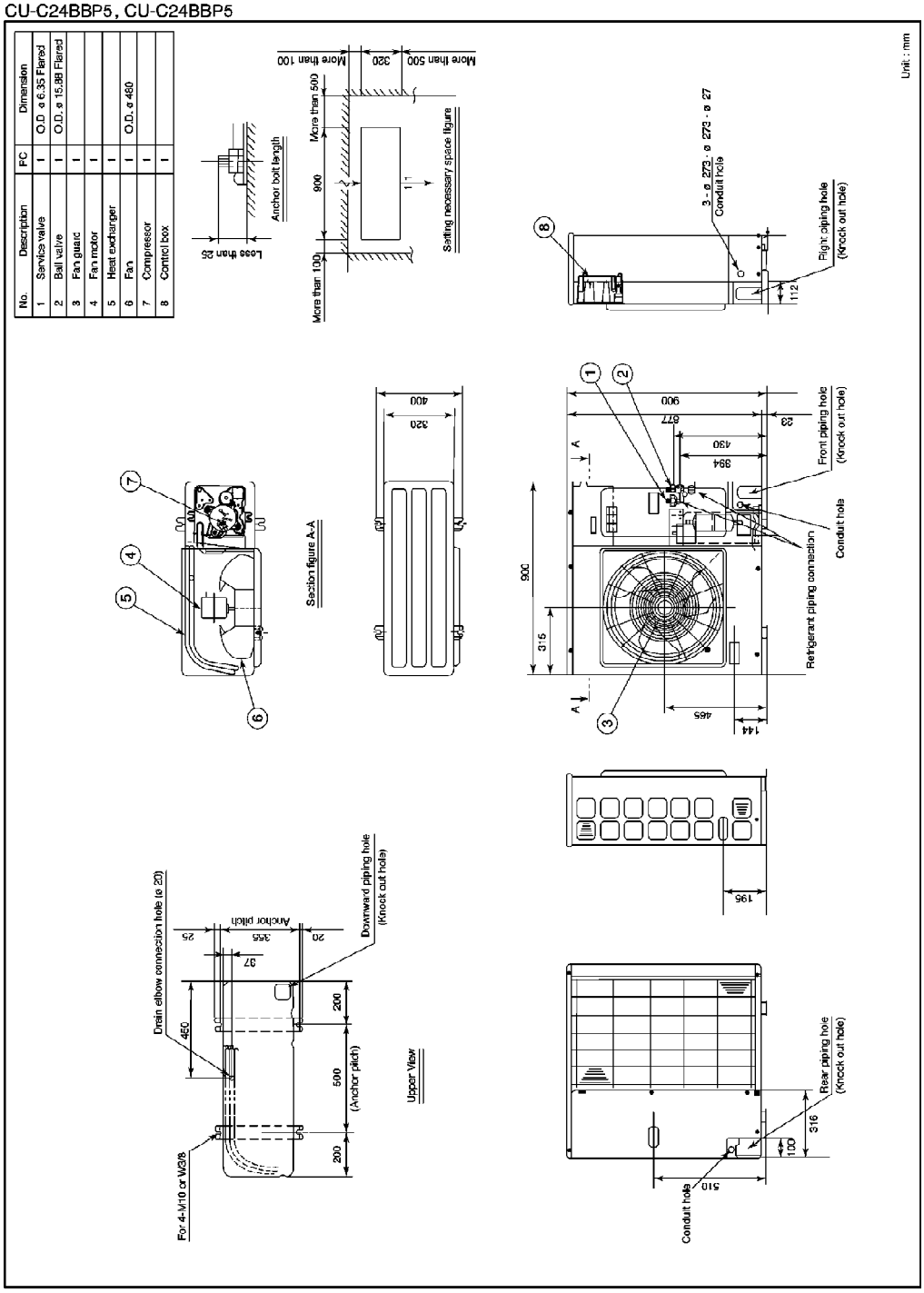


/ / CS-A34BD3P, CS-A43BD3P, CS-A50BD3P / OUTSIDE DIMENSIONS

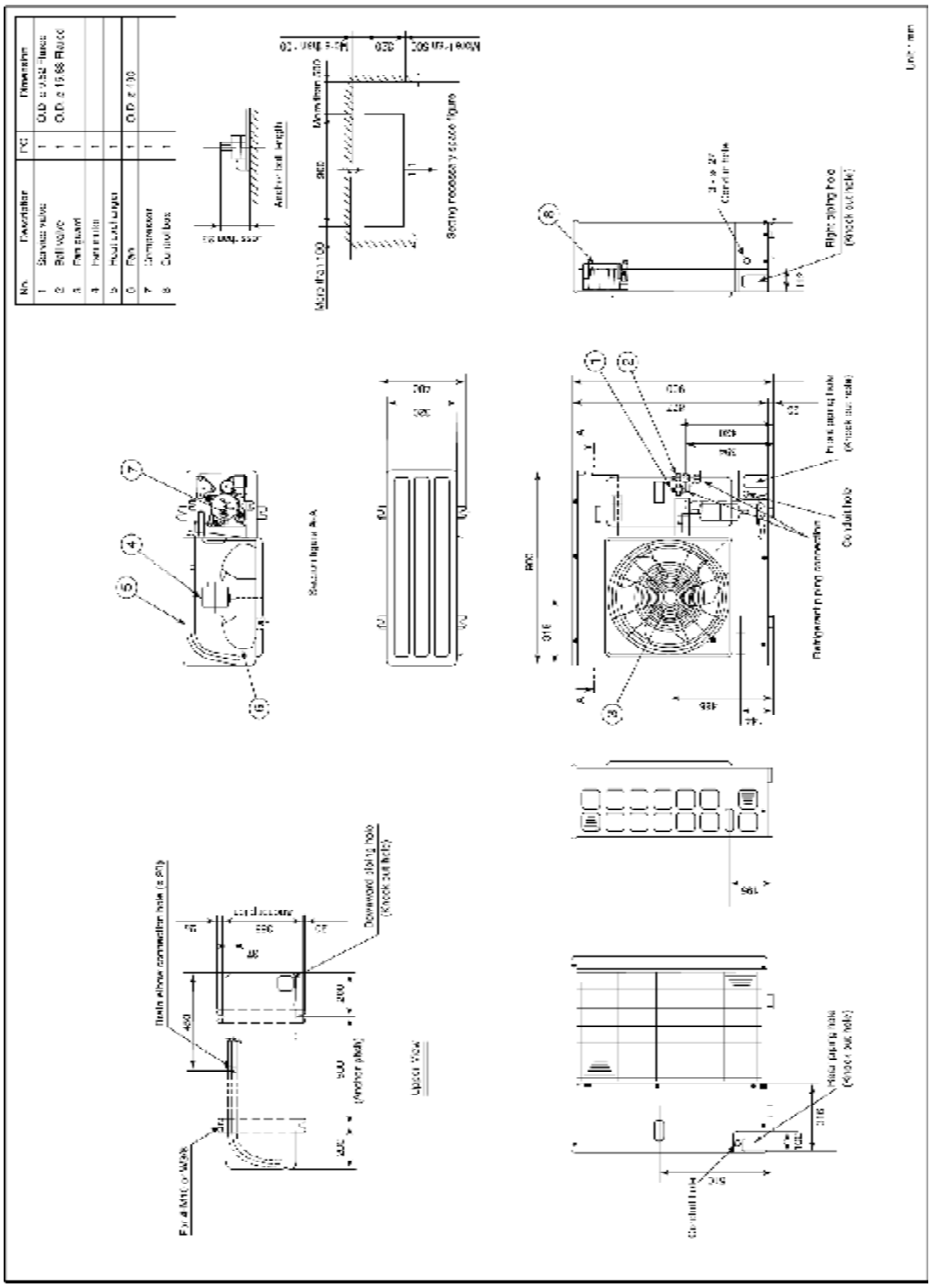

No. NAME QTY NOTE
1 Pipe connection (gas) 1 O.D. φ19.05 Flared
2 Pipe connection (liquid) 1 O.D. φ9.52 Flared
3 Drain pipe connection 2 Female screw PTI
4 Duct connection 2
5 Hanger 4
6 Control box 1
44-φ4.5
46-φ4.5
OUTLET
Drain pipe connection

CU-A24BBP5, CU- C24BBP5

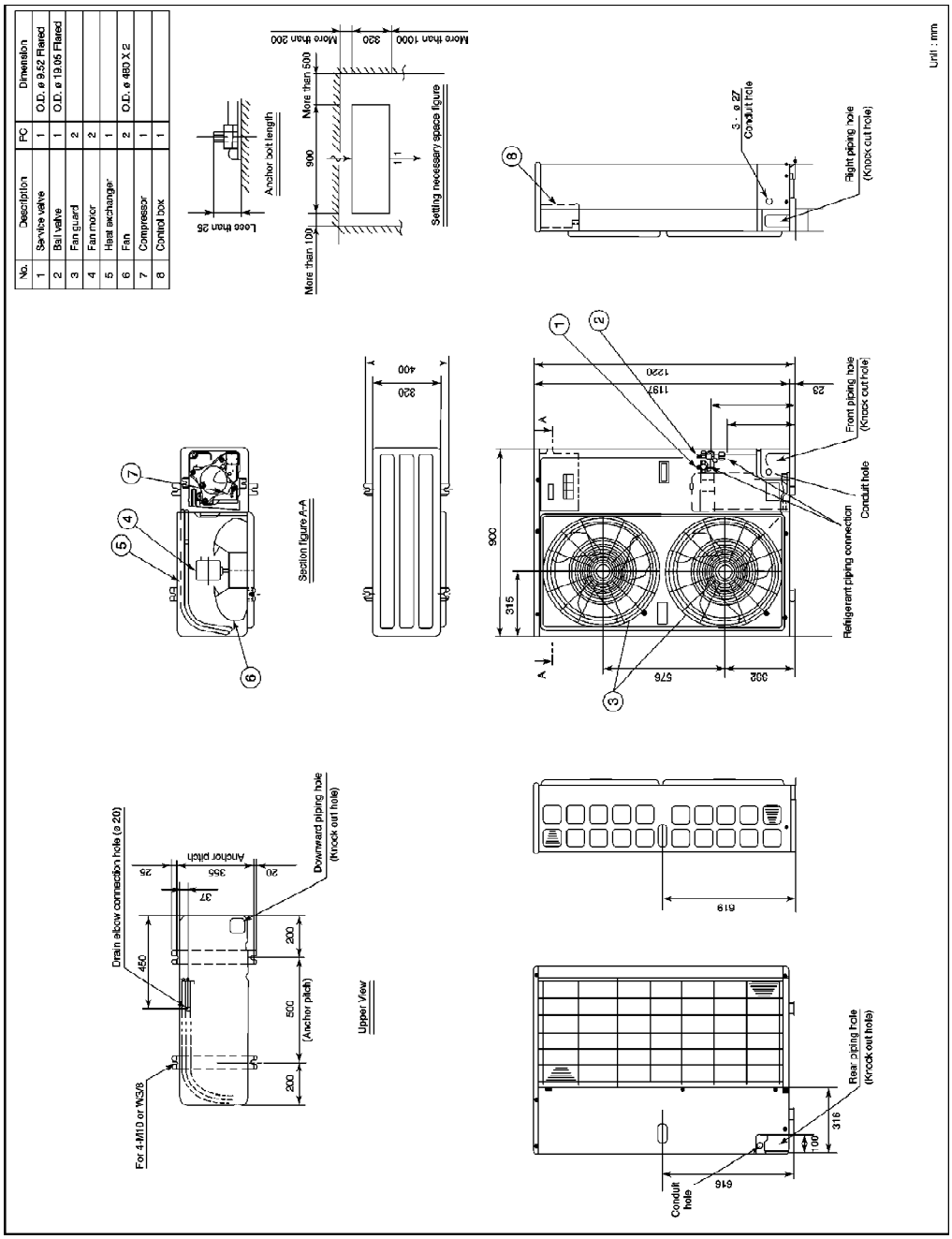
CU-C24BBP5, CU-C24BBP5



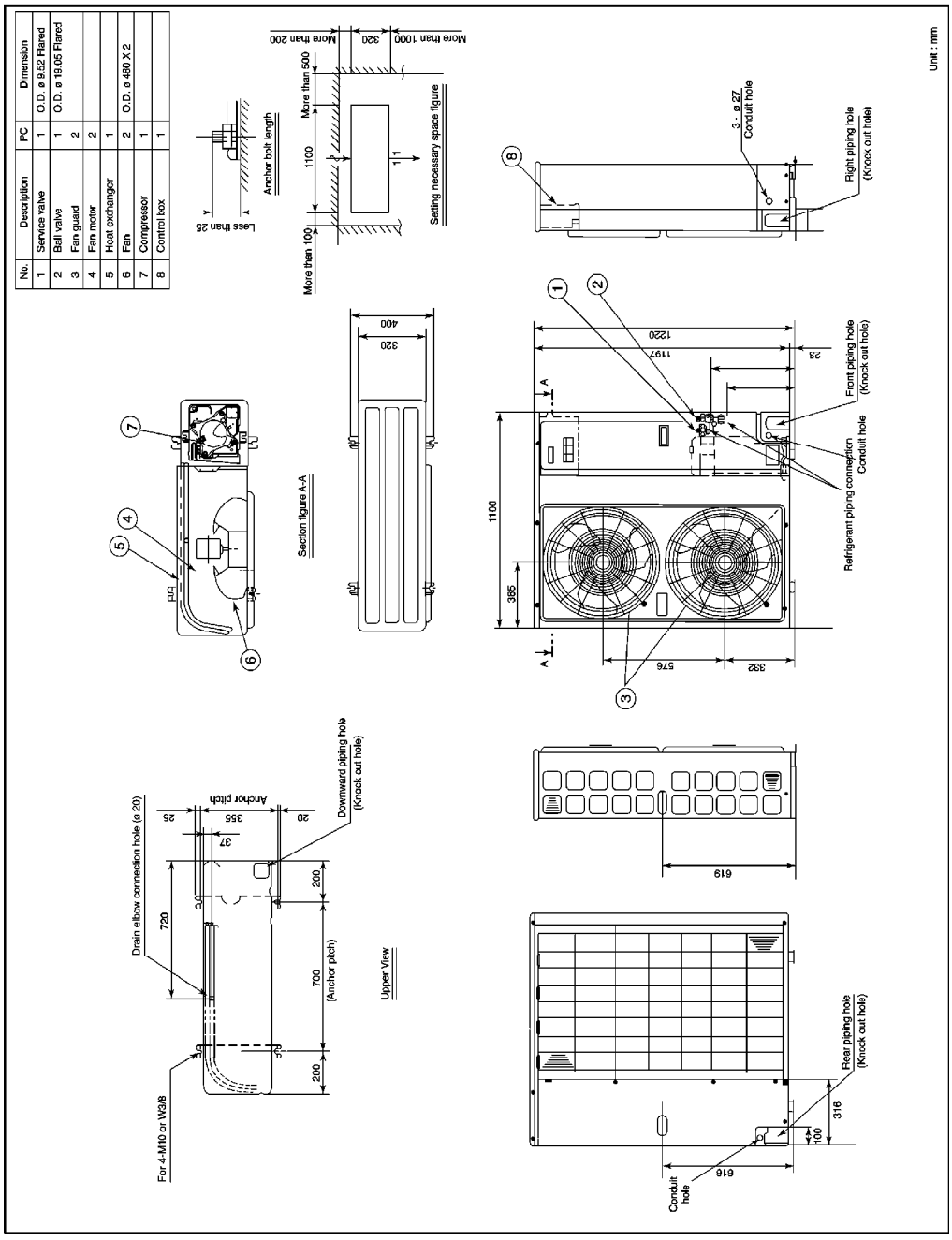
CU-A28BBP5, CU-A28BBP8,



CU-A34BBP5, CU-C34BBP5, CU-A34BBP8, CU-C34BBP8



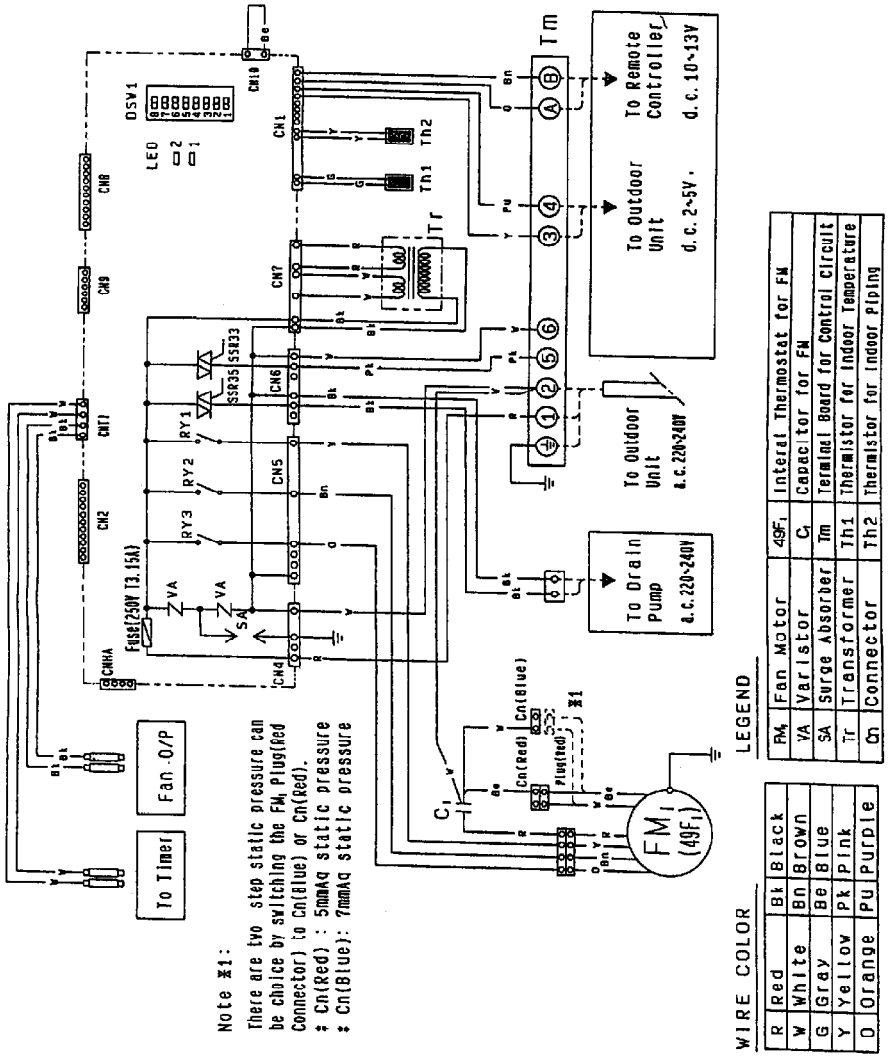
CU-A43BBP8, CU-A50BBP8, CU-C43BBP8, CU-C50BBP8



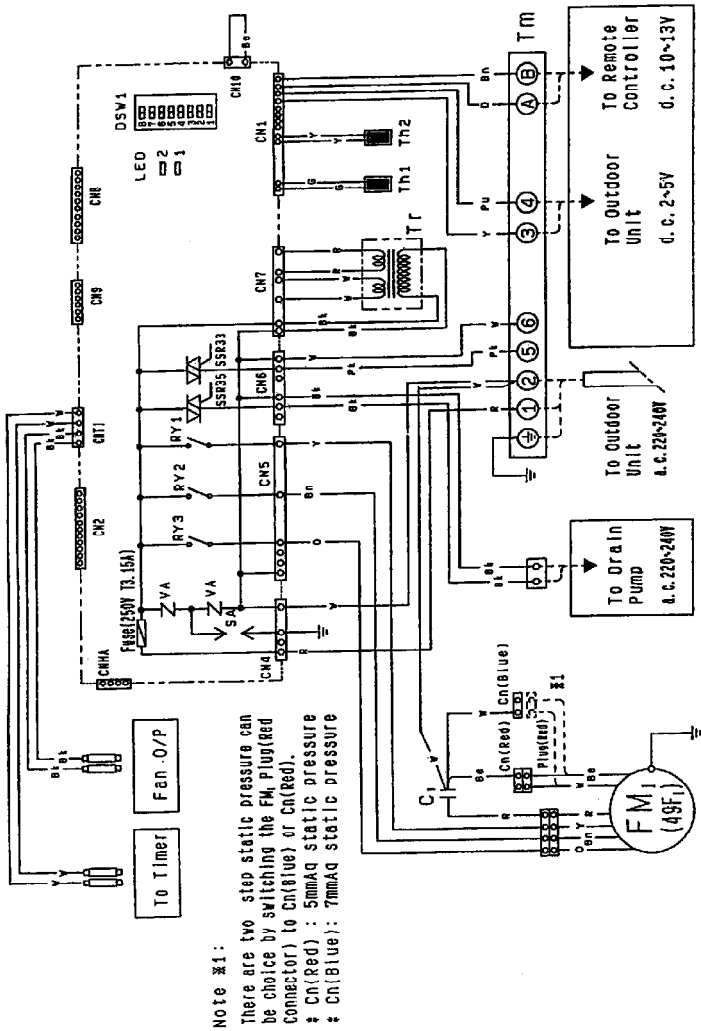
6. CIRCUIT DIAGRAM

CS-A24BD3P, CS-A28BD3P

CONNECTION DIAGRAM (Indoor Unit)



CONNECTION DIAGRAM (Indoor Unit)



Note ※1:
There are two step static pressure can be choice by switching the FM Plug(Red Connector) to Cn(Blue) or Cn(Red).
* Cn(Red) : 5mmAq static pressure
* Cn(Blue): 7mmAq static pressure

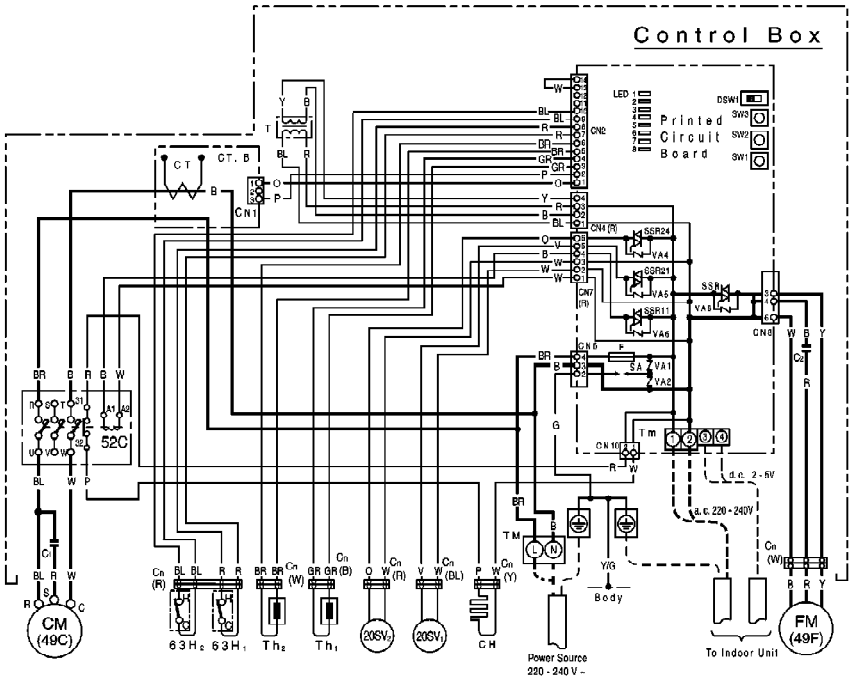
WIRE COLOR

R	Red	Bk	Black
W	White	Bn	Brown
G	Gray	Be	Blue
Y	Yellow	Pk	Pink
O	Orange	PU	Purple

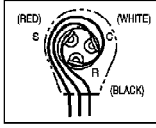
LEGEND

FM	Fan Motor	49F	Interal Thermostat for FM
VA	Varistor	C_1	Capacitor for FM
SA	Surge Absorber	Tm	Terminal Board for Control Circuit
Tr	Transformer	Th1	Thermistor for Indoor Temperature
Cn	Connector	Th2	Thermistor for Indoor Piping

CU-A24BBP5, CU-A28BBP5



☆Compressor Terminal



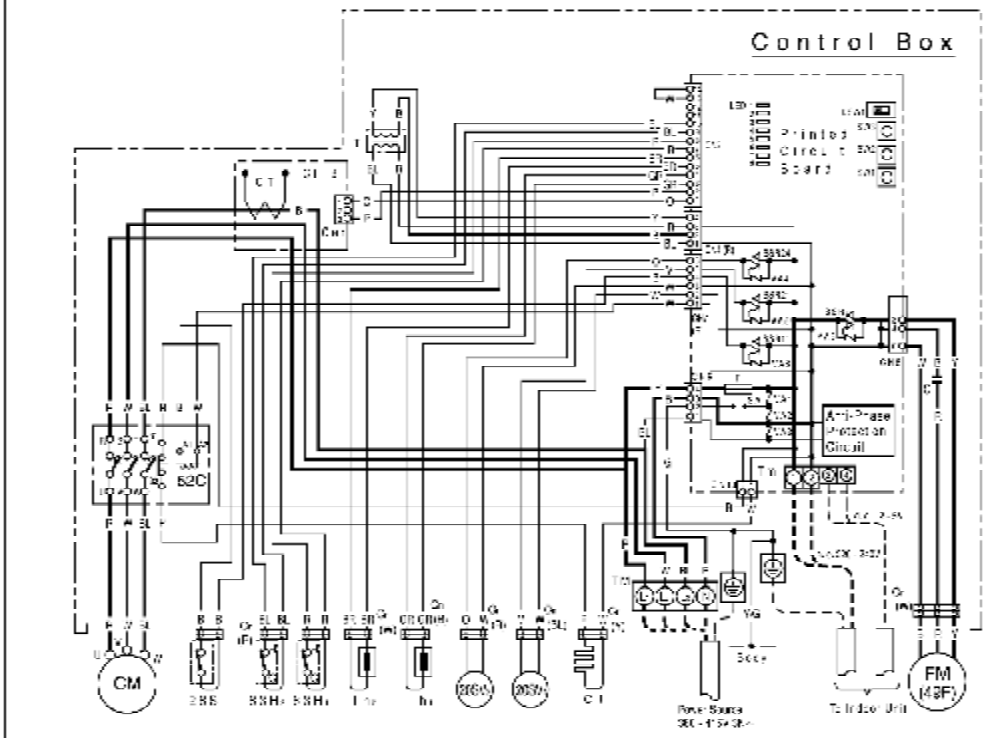
WIRE COLOUR

R	RED	W	WHITE	BL	BLACK
Y	YELLOW	BR	BROWN	V	VIOLET
B	BLUE	P	PINK	G	GREEN
O	ORANGE	GR	GREY		
Y/G	YELLOW / GREEN				

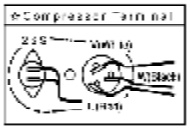
LEGEND

CM	Compressor Motor	$20SV_1$	Reversing Valve		Printed Circuit Board
FM	Fan Motor (Outdoor Unit)	$20SV_2$	Bypass Magnetic Valve	SA	Surge Absorber
52C	Magnetic Contactor for CM	TM	Terminal Board for Main Circuit	VA_{1-3}	Varistor
C_1	Capacitor for CM	CT.B	Current Trans Board	F	Fuse 250V T 6.3A
C_2	Capacitor for FM	Th_1	Thermistor (Compressor discharge temp.)	CN_{1-19}	Connector
CH	Crankcase Heater for CM	Th_2	Thermistor (Heat exchanger outlet temp.)	$SSR_{1,11}$	Solid State Relay
$63H_1$	High Pressure Switch	CT	Current Transformer	$SSR_{21,24}$	Solid State Relay
$63H_2$	High Pressure Switch Heat-pump	Cn	Connector	Tm	Terminal Board for Control Circuit
49C	Internal Protector for CM	T	Transformer		
49F	Internal Protector for FM				

CU-A28BBP8



WIRE COLOUR

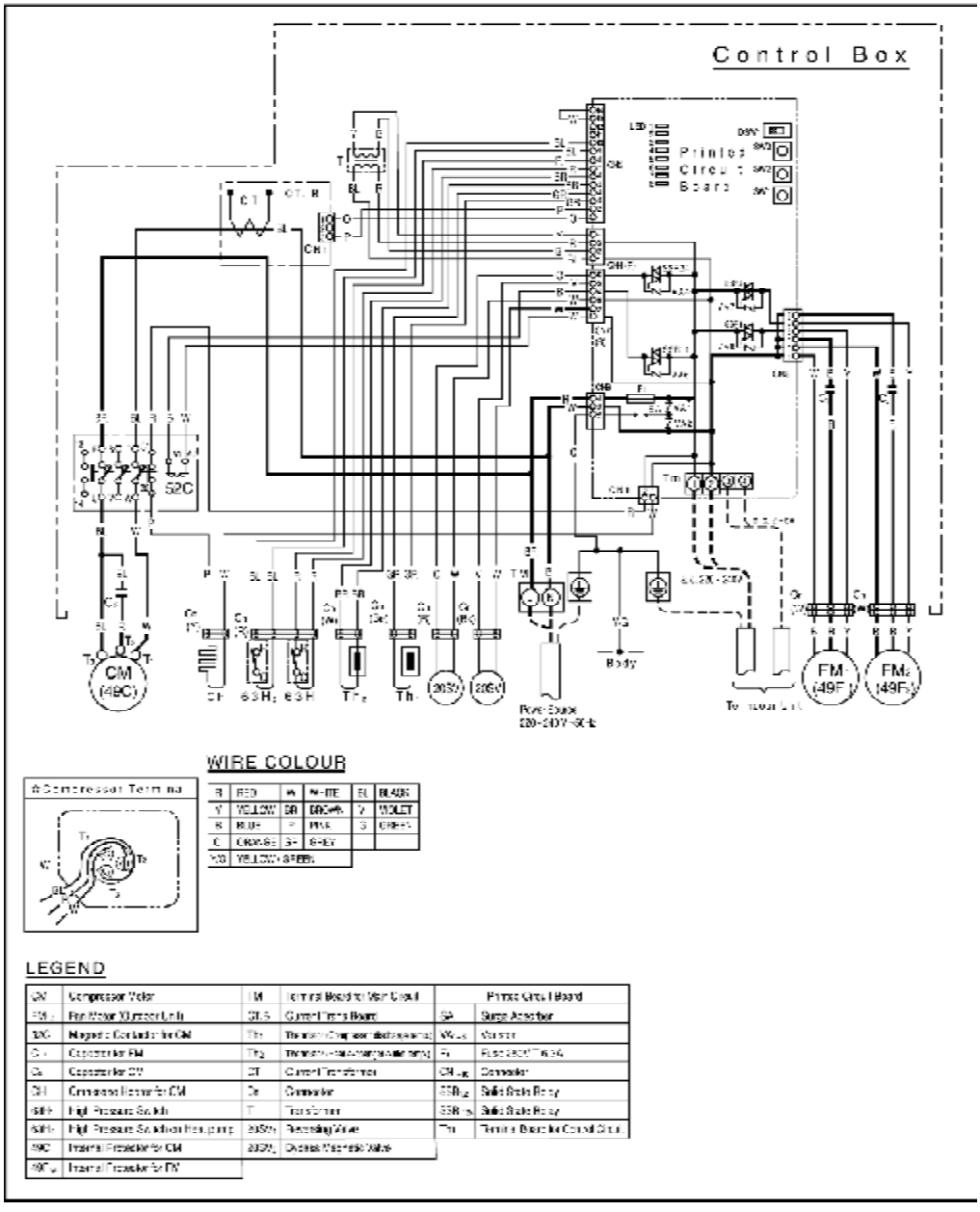


R	RED	W	WHITE	BL	BLACK
Y	YELLOW	BR	BROWN	V	VIOLET
B	BLUE	P	PINK	G	GREEN
O	ORANGE	GY	GREY		
(*1)	Y / GREEN				

LEGEND

CM	Compressor Motor	20SV	Reversing Valve	Printed Circuit Board	
FM	Fan Motor (Outdoor Unit)	21SV	Bypass Magnetic Valve	BA	Surge Absorber
52C	Magnetic Contactor for CM	LV	Terminal Board for Main Circuit	Wire	Varistor
C	Capacitor for FM	CTB	Current Trans Board	F	Fuse (AC 7.5A)
CH	Compressor Heater for CM	Tm	Thermistor (Discharge Pipe)	CN-( )	Connector
63H	High Pressure Switch	Th	Thermistor (Heat Exchanging)	SSR-1	Solid State Relay
63HS	High Pressure Switch for Reliability	CT	Current Transformer	SSR-2	Solid State Relay
Cn	Connector	T	Transformer	Tm	Terminal Board for Control Circuit
49F	Inverter Protection for FM	26S	Bimetal Thermostat for CM		

CU-A34BBP5



WIRE COLOUR

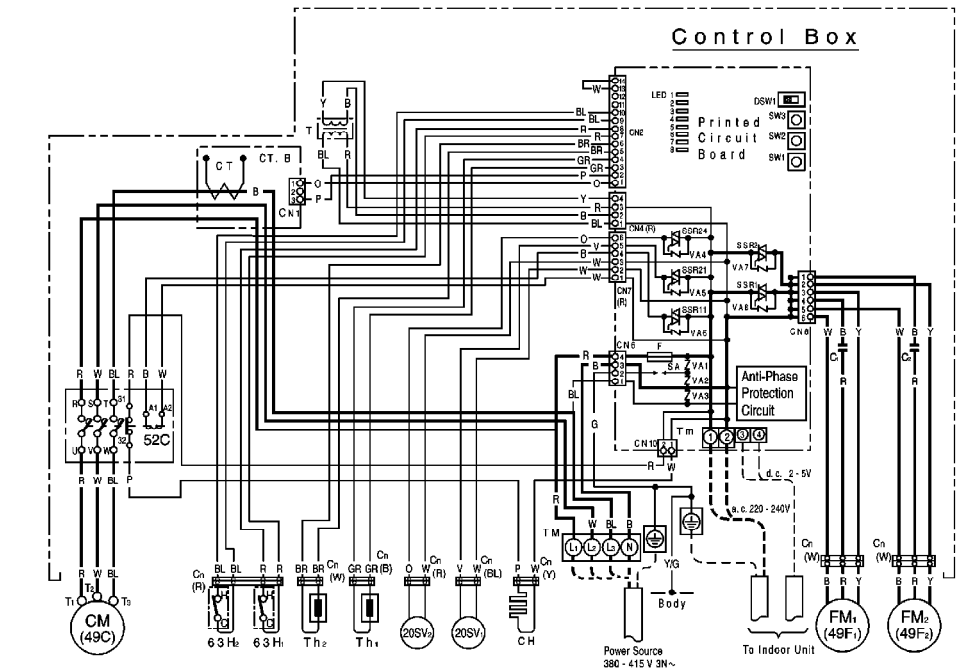
R	RED	W	WHITE	BL	BLACK
Y	YELLOW	BR	BROWN	V	VIOLET
B	BLUE	P	PINK	G	GREY
O	ORANGE	Gr	GREY		
Y/G	YELLOW/GREEN				

※ Compressor Terminal

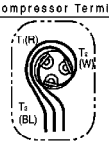
LEGEND

CM	Compressor Motor	PCB	Control Board for Main Circuit	Printed Circuit Board	
FM	Fan Motor (Propeller Type)	STR	Current Trans Board	SA	Surge Absorber
52C	Magnetic Contactor for CM	Th	Thermistor (Compressor discharge temp.)	VA	Varistor
C	Capacitor for FM	Th	Thermistor (Heat exchanger temp.)	F	Fuse (250V 3.15A)
Cs	Capacitor for CM	CT	Current Transformer	CN	Connector
CH	Crankcase Heater for CM	Tr	Transformer	SSR	Solid State Relay
63H	High Pressure Switch	T	Transformer	SSR	Solid State Relay
63HS	High Pressure Switch (Protection)	20SV	Reversing Valve	Th	Thermistor (Inside the Control Circuit)
49C	Internal Protector for CM	21SV	Electric Magnetic Valve		
49F	Internal Protector for FM				

CU-A34BBP8, CU-A43BBP8, CU-A50BBP8



☆Compressor Terminal



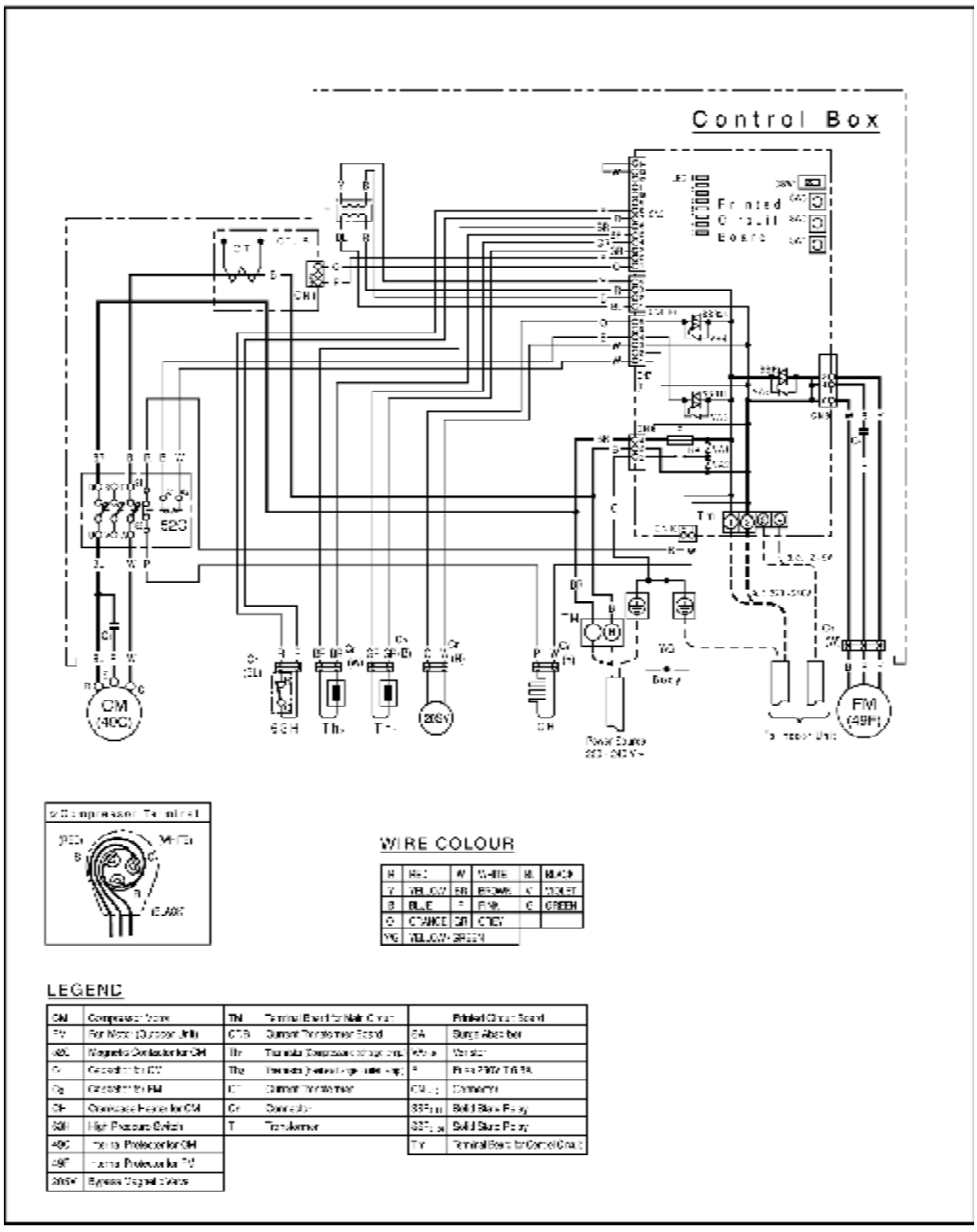
WIRE COLOUR

R	RED	W	WHITE	BL	BLACK
Y	YELLOW	BR	BROWN	V	VIOLET
B	BLUE	P	PINK	G	GREEN
O	ORANGE	GR	GREY		
Y/G	YELLOW / GREEN				

LEGEND

CM	Compressor Motor	$20SV_1$	Reversing Valve	Printed Circuit Board	
$FM_{1,2}$	Fan Motor (Outdoor Unit)	$20SV_2$	Bypass Magnetic Valve	SA	Surge Absorber
52C	Magnetic Contactor for CM	TM	Terminal Board for Main Circuit	VA_{1-8}	Varistor
$C_{1,2}$	Capacitor for $FM_{1,2}$	CT,B	Current Trans Board	F	Fuse 250V T 6.3A
CH	Crankcase Heater for CM	Th_1	Thermistor (Compressor discharger temp.)	CN_{1-10}	Connector
$63H_1$	High Pressure Switch	Th_2	Thermistor (Heat exchanger outlet temp.)	$SSR_{21,11}$	Solid State Relay
$63H_2$	High Pressure Switch on Heat-pump	CT	Current Transformer	$SSR_{24,14}$	Solid State Relay
Cn	Connector	49C	Internal Protector for CM	Tm	Terminal Board for Control Circuit
T	Transformer	$49F_{1,2}$	Internal Protector for $FM_{1,2}$		

CU-C24BBP5, CU-C28BBP5,



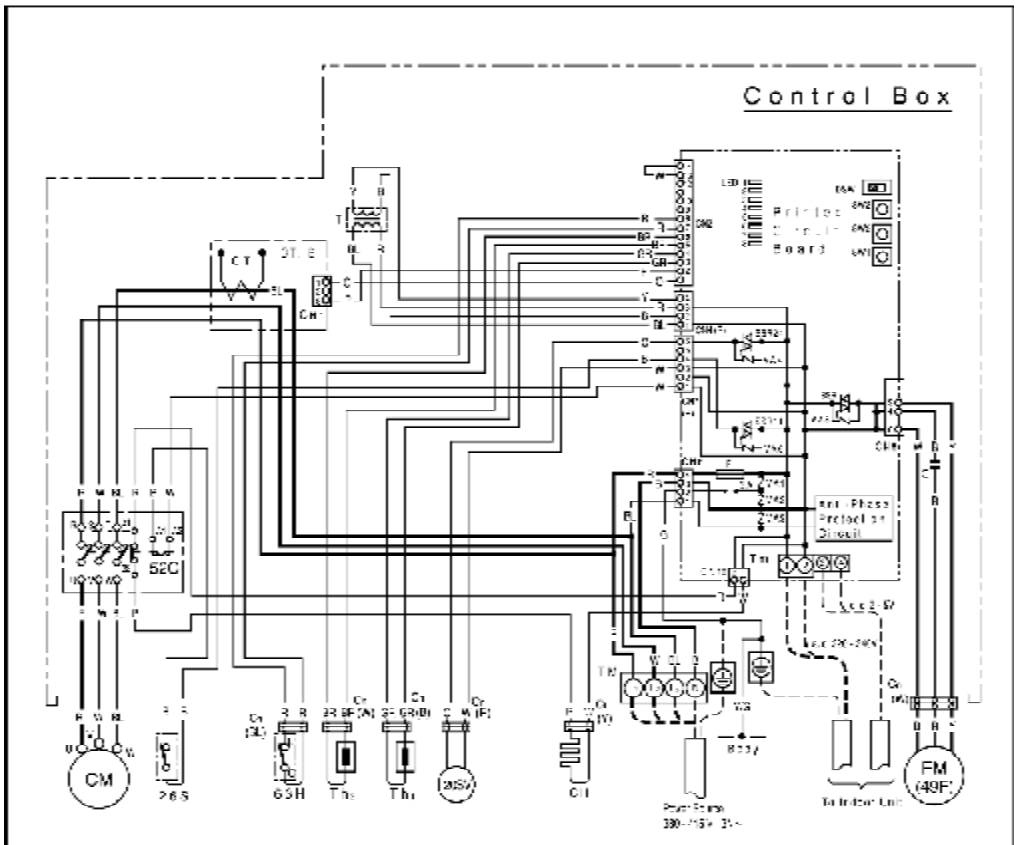
WIRE COLOUR

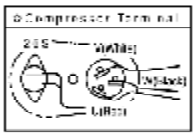
R	RED	W	WHITE	Bl	BLACK
Y	YELLOW	BR	BROWN	O	ORANGE
B	BLUE	P	PINK	G	GREEN
O	ORANGE	GR	GREY		
YG	YELLOW-GREEN				

LEGEND

CM	Compressor Motor	TN	Terminal Board for Main Circuit		Printed Circuit Board
FM	Fan Motor (Outdoor Unit)	CTR	Current Transformer Board	SA	Surge Absorber
52C	Magnetic Contactor for CM	Th	Thermistor (Compressor Temperature)	ZNR	Varistor
C	Capacitor for CM	Thf	Thermistor (Heat Exchanger Temperature)	F	Fuse 250V T6.3A
Cf	Capacitor for FM	CT	Current Transformer	CN-[illegible]	Connector
CH	Crankcase Heater for CM	Cr	Diode Stack	S3F[illegible]	Solid State Relay
63H	High Pressure Switch	T	Transformer	S3T[illegible]	Solid State Relay
49C	Fusible Protector for CM			Tr	Terminal Board for Control Circuit
49F	Fusible Protector for FM				
20SV	Bypass Magnetic Valve				

CU-C28BBP8





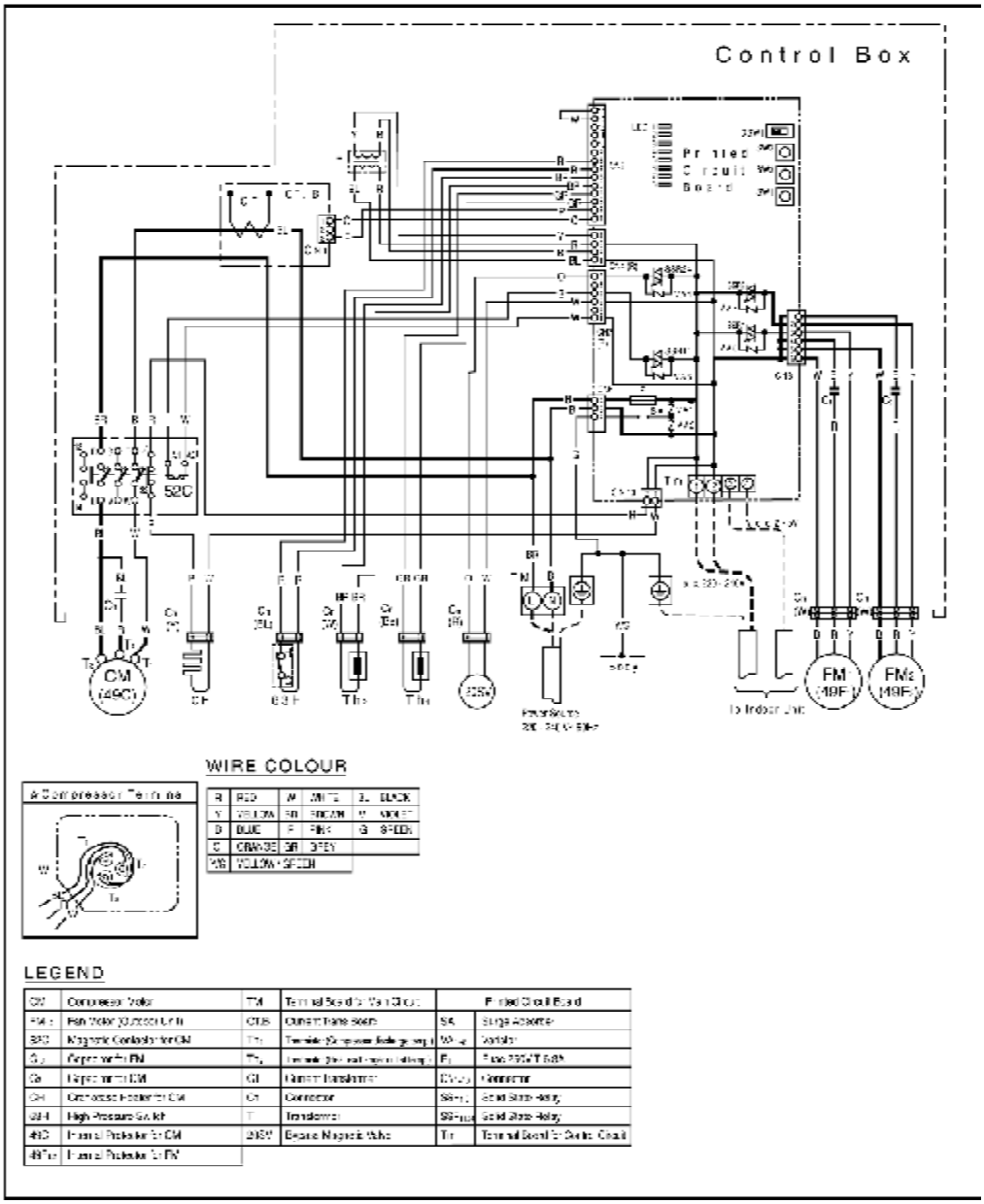
WIRE COLOUR

R	RED	W	WHITE	BL	BLACK
Y	YELLOW	BR	BROWN	V	VIOLET
B	BLUE	P	PINK	G	GREEN
O	ORANGE	GY	GREY		
YG	YELLOW/GREEN				

LEGEND

CM	Compressor Motor	TM	Terminal Board for Main Circuit	Wires Circuit Board	
FM	Fan Motor (Outdoor Unit)	CTB	Current Transformer Board	SA	Surge Absorber
52C	Magnetic Contactor for CM	Thr	Thermistor (Compressor discharge pipe)	Wire	Varistor
C	Capacitor for FM	Thf	Thermistor (heat exchanger outlet temp.)	F	Fuse 250V T 6.3A
CH	Crankcase Heater for CM	CT	Current Transformer	CN--	Connector
63H	High Pressure Switch	T	Transformer	SSR1	Solid State Relay
CN	Connector	49S	Internal Thermostat for CM	SSR2	Solid State Relay
49F	Internal Protector for FM			TM	Terminal Board for Out of Circuit
20SV	Bypass Magnetic Valve				

CU-C34BBP5



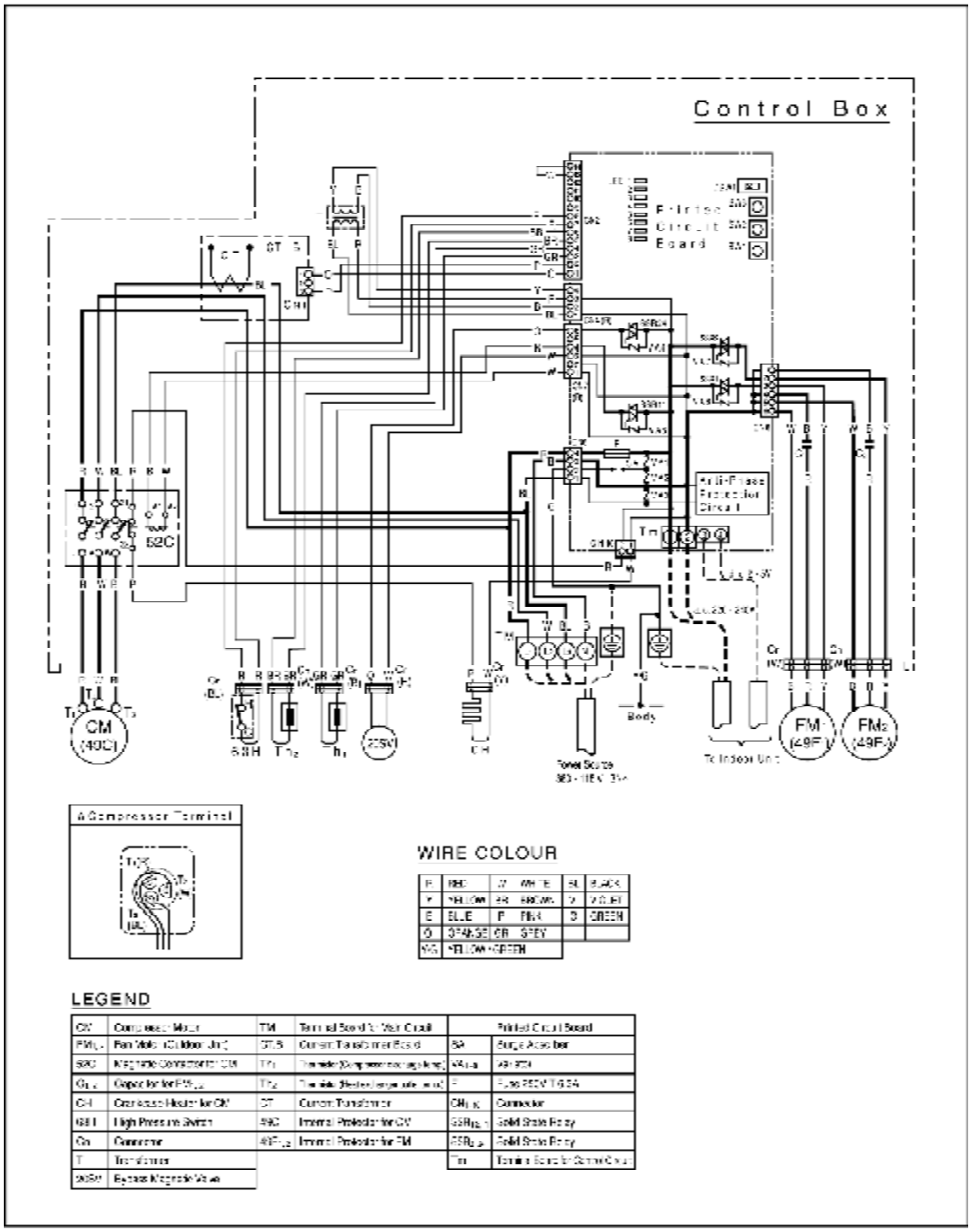
WIRE COLOUR

R	RED	W	WHITE	BL	BLACK
Y	YELLOW	BR	BROWN	V	VIOLET
B	BLUE	P	PINK	G	GREEN
O	ORANGE	GR	GREY		
Y/G	YELLOW / GREEN				

LEGEND

CH	Compressor Heater	TM	Terminal Board for Main Circuit	Printed Circuit Board	
FM1	Fan Motor (Upper) (1/2 Unit)	CTB	Current Transformer	SA	Surge Absorber
52C	Magnetic Contactor for CM	T_{R1}	Terminal Block for Power Supply (1 Unit)	VA	Varistor
C_{R1}	Capacitor for FM	T_{R2}	Terminal Block for Power Supply (2 Units)	F_1	Fuse 250V T 6.3A
Cs	Capacitor for CM	CT	Current Transformer	$D_{1\sim4}$	Diode
CH	Crankcase Heater for CM	CN	Connector	$SR_{1,2}$	Solid State Relay
HPS	High Pressure Switch	T	Transformer	$SR_{FM1,2}$	Solid State Relay
49C	Thermal Protector for CM	21SV	Reverse Magnetic Valve	Tr	Terminal Board for Control Circuit
49F	Thermal Protector for FM				

CU-C34BBP8, CU-C43BBP8, CU-C50BBP8



- APPLICABLE FOR ALL MODELS

■APPLICABLE MODEL

ALL MODEL

●INDOOR UNIT

PRINTED CIRCUIT BOARD

S PHASE		4
SURGE ABSORBER		3
———		2
R PHASE		1

CN4

Option board connection(S PH)	2
Option board connection(R PH)	1

INDOOR FAN L		6
INDOOR FAN M		5
INDOOR FAN H		4
———		3
COM		2
COM		1

CN5

LOUVER MOTOR		6
HEATER		5
DRAIN PUMP		4
COM	(S PH)	3
COM	(S PH)	2
COM	(S PH)	1

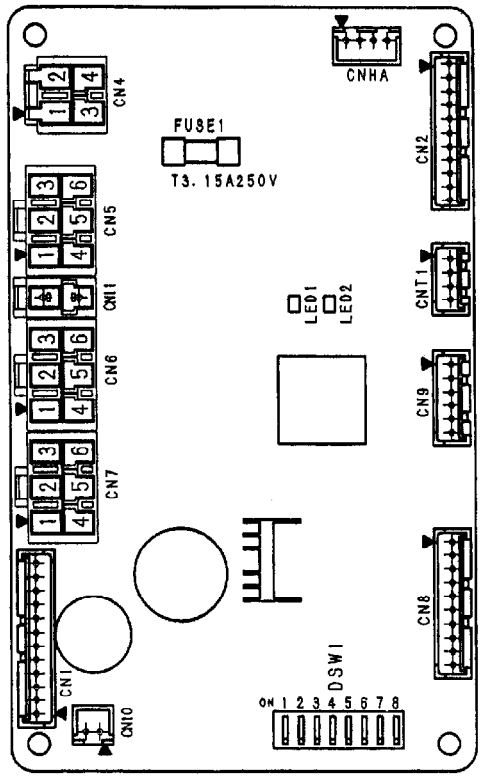
CN6

TRANSFORMER 1ST	(R PH)	6
TRANSFORMER 2ND		5
TRANSFORMER 2ND		4
TRANSFORMER 1ST	(S PH)	3
TRANSFORMER 2ND		2
TRANSFORMER 2ND		1

CN7

ROOM THERMISTOR	12
ROOM THERMISTOR	11
PIPE THERMISTOR	10
PIPE THERMISTOR	9
———	8
———	7
LOUVER SW	6
LOUVER SW	5
COMMUNICATION WITH OUTDOOR UNIT	4
COMMUNICATION WITH OUTDOOR UNIT	3
WIRED REMOTE CONTROLLER	2
WIRED REMOTE CONTROLLER	1

CN1



CN10

2	1
FLOAT SW	FLOAT SW

CN8	CENTRAL CONTROL BOARD CONNECTION	
CN2	OPTIONAL BOARD CONNECTION	
CNT1	4	TIMER INPUT(GND)(Non Voltage A contact)
	3	TIMER INPUT(Non Voltage A contact)
	2	FAN OUTPUT(DC12V,Max 0.9W)
	1	FAN OUTPUT

- APPLICABLE FOR ALL MODELS

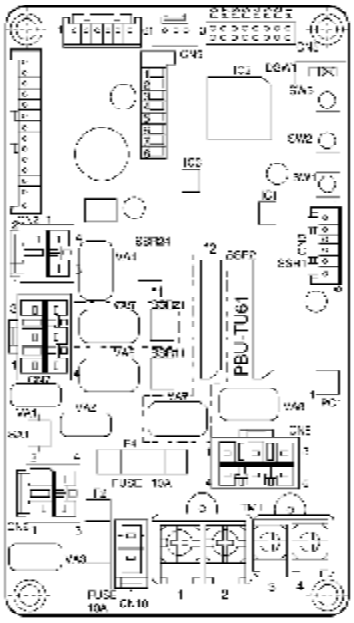
APPLICABLE FOR ALL MODELS

● OUTDOOR UNIT
PRINTED CIRCUIT BOARD

	14	
	13	
GND	12	
DEMAND INPUT	11	
GND	10	
HEATING PRESSURE SW	9	
GND	8	CN2
HIGH PRESSURE SW	7	
GND	6	
PIPE TEMP SENSOR	5	
GND	4	
DISCHARGE TEMP SENSOR	3	
GND	2	
CT	1	

*1. HEAT PUMP MODEL ONLY
*2. CU-3439B type / CU-4339B type / CU-5039B type } Model only

COMMUNICATION WITH INDOOR UNIT	4	
COMMUNICATION WITH INDOOR UNIT	3	TM1
S Phase	2	
R Phase	1	



S Phase	1	
Fan2(R)	2	
Fan1(R)	3	CN9
S Phase	4	
S Phase	5	
S Phase	6	

TRANSFORMER 2ND(S)	4	
TRANSFORMER 1ST(R)	3	CN4
TRANSFORMER 2ND(R)	2	
TRANSFORMER 1ST(S)	1	

CRANKCASE HEATER(S)	1	CN10
CRANKCASE HEATER(R)	2	

LIQUID BYPASS valve(F)	6	
REVERSING valve(F)	5	
COMPRESSOR relay(R)	4	CN7
LIQUID BYPASS valve(S)	3	
REVERSING valve(S)	2	
COMPRESSOR relay(S)	1	

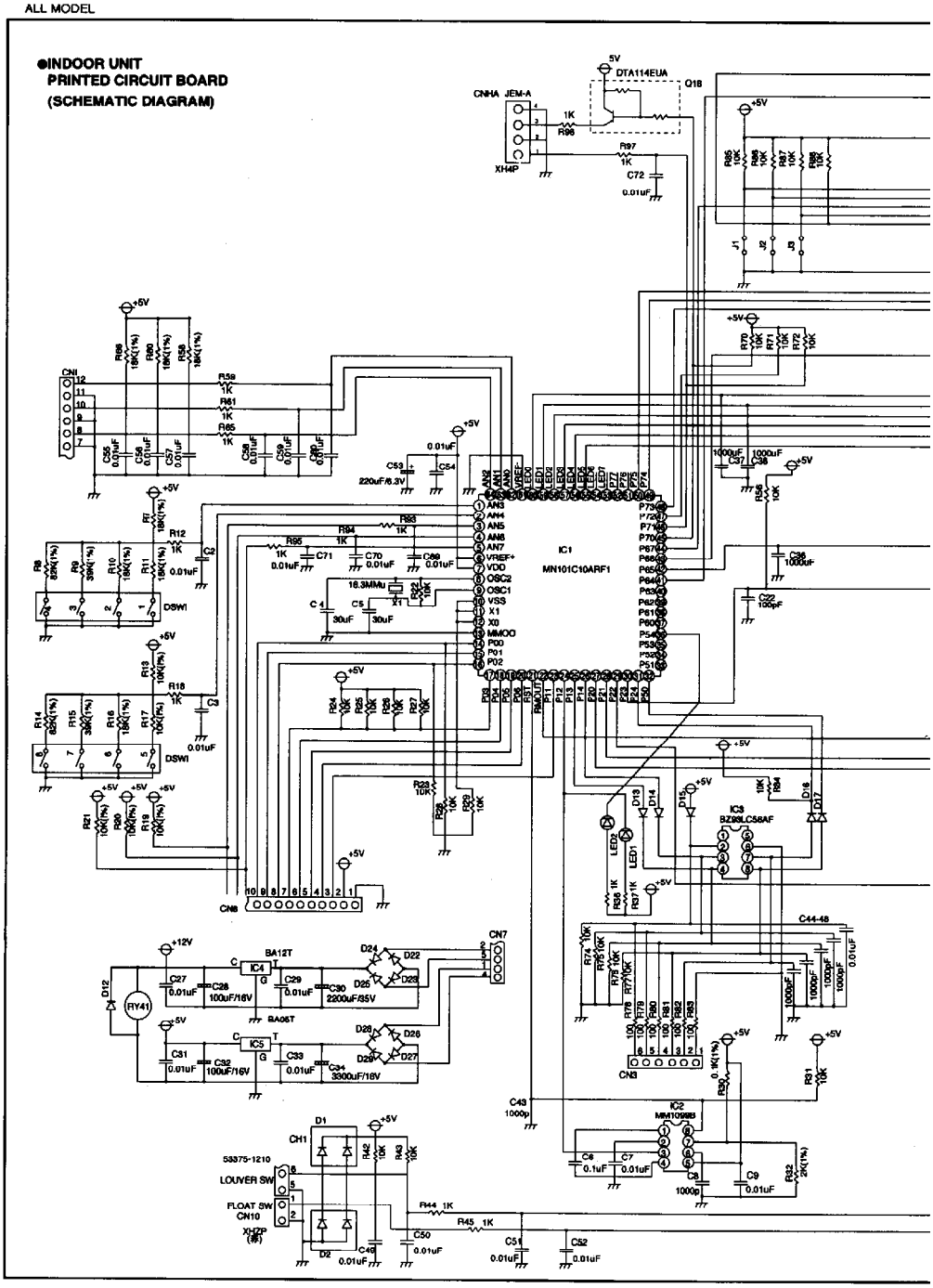
R Phase	4	
S Phase	3	CN6
Earth	2	
T Phase	1	

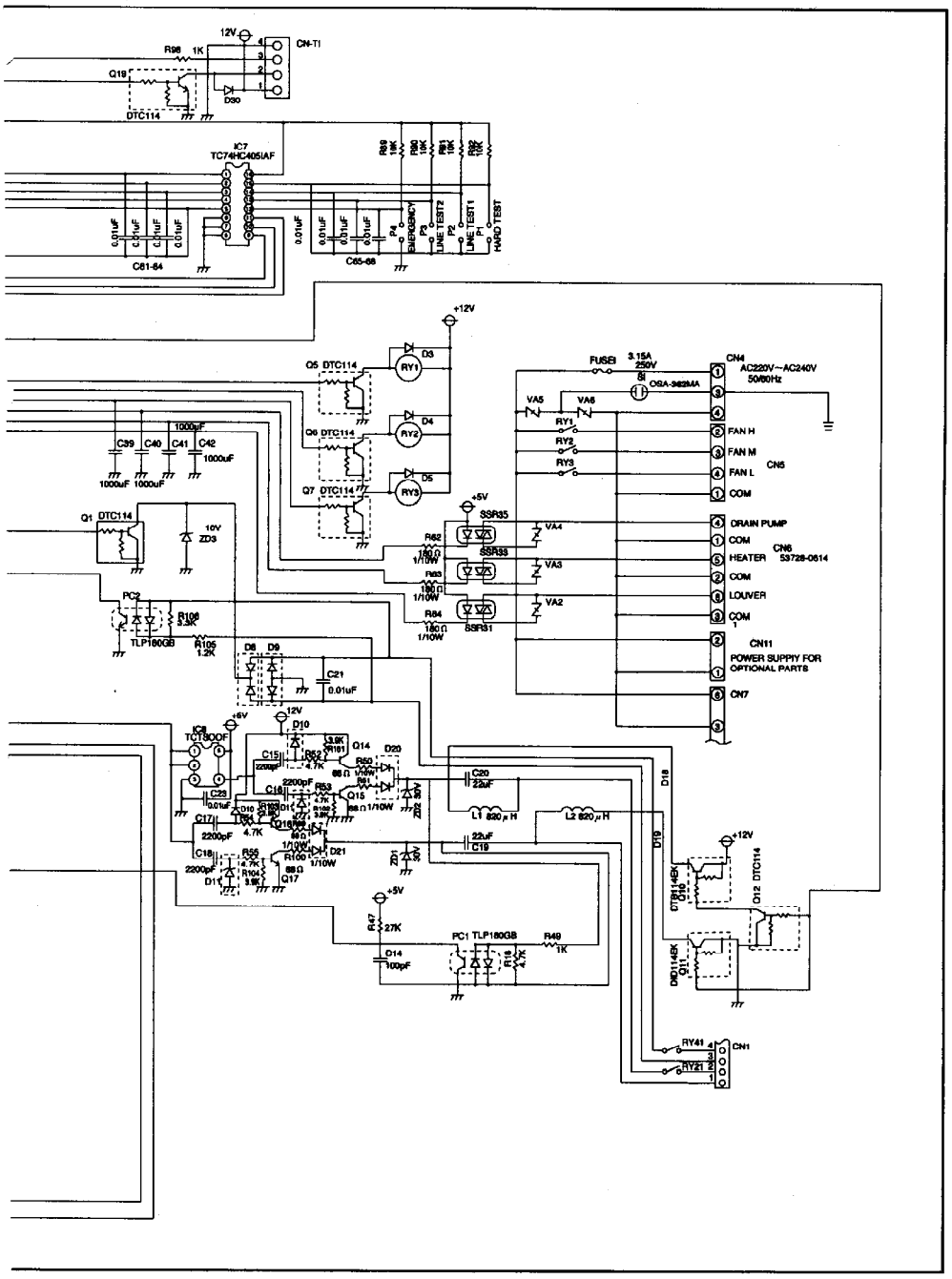
- APPLICABLE FOR ALL MODELS

■APPLICABLE MODEL

ALL MODEL

●INDOOR UNIT
PRINTED CIRCUIT BOARD
(SCHEMATIC DIAGRAM)

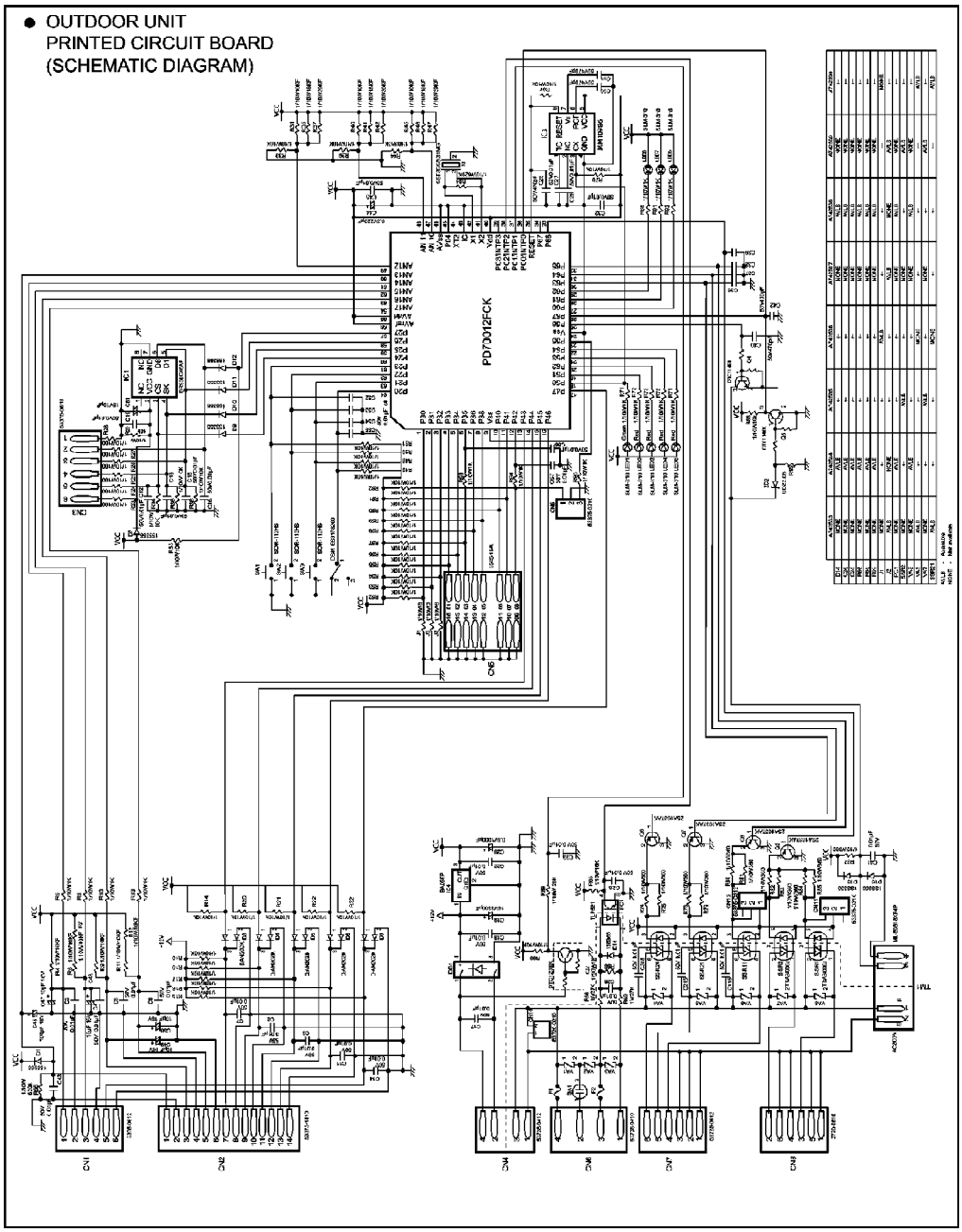




- APPLICABLE FOR ALL MODEL

APPLICABLE FOR ALL MODELS

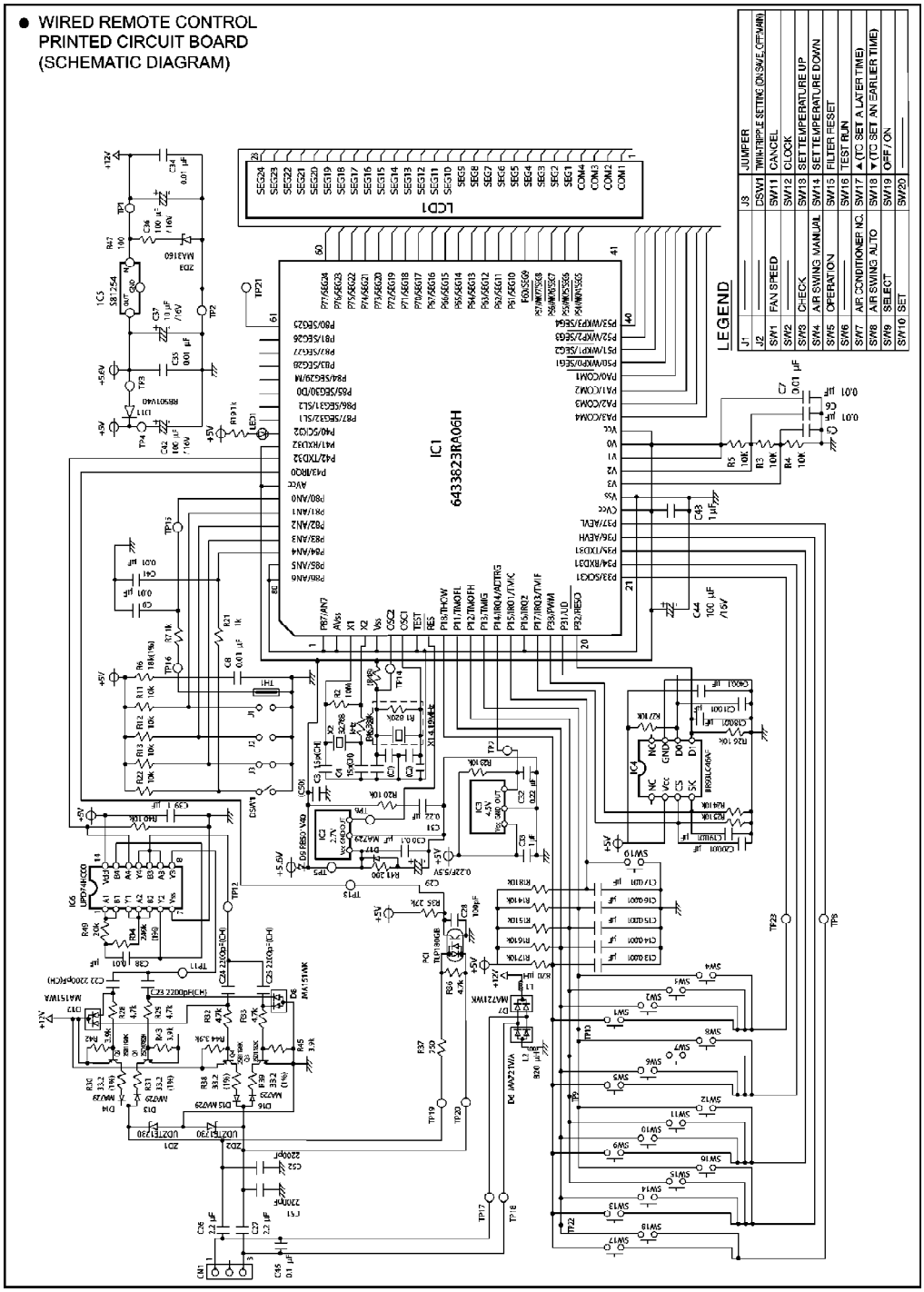
● OUTDOOR UNIT
PRINTED CIRCUIT BOARD
(SCHEMATIC DIAGRAM)



- APPLICABLE FOR ALL MODEL

APPLICABLE FOR ALL MODELS

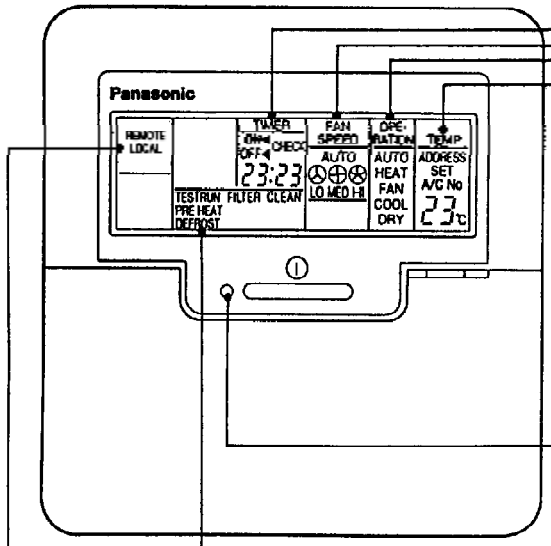
● WIRED REMOTE CONTROL
PRINTED CIRCUIT BOARD
(SCHEMATIC DIAGRAM)



7. OPERATING INSTRUCTION

7.1. Wired Remote Control

Name and function of each part



Timer/time setting display
This display shows the timer operation setting time or the current time.

Fan speed display

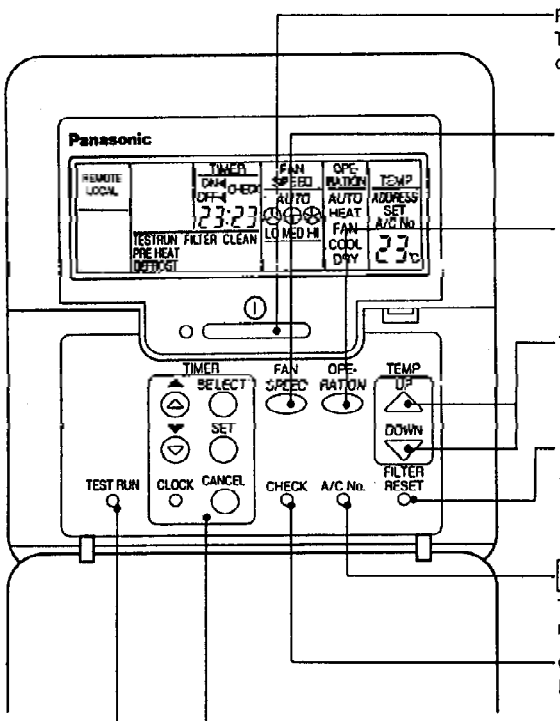
Operation selection display

Temperature setting display
This display shows the setting temperature for the indoor unit.
The temperature can be set within the range 16° - 31°C.

Operation indicator (red)
This indicator illuminates when the indoor unit is running.

TEST
Indicates that the indoor unit is running in test operation mode.
PREHEAT DEFROST
Indicates that the indoor unit is running in pre-heating or defrosting mode.
CLEAN FILTER
Indicates that it is time to clean the filter.
It appears after the cumulative running time reaches approximately 200 hours.

REMOTE
The RUN and STOP functions on the remote control unit cannot be used.
LOCAL
All remote control unit functions can be used.
COMMON
Operation is possible using a device other than the remote control unit.



RUN switch
This switch is used to run or stop the indoor unit operation.

FAN SPEED switch

OPERATION MODE switch

TEMPERATURE SETTING switch

FILTER RESET switch
After the filter has been cleaned, press this switch to clear the "CLEAN FILTER" display.

Air conditioner No. switch
This switch is used during group control. It is not needed for normal operation.

CHECK switch
Press this switch if the check display is flashing.

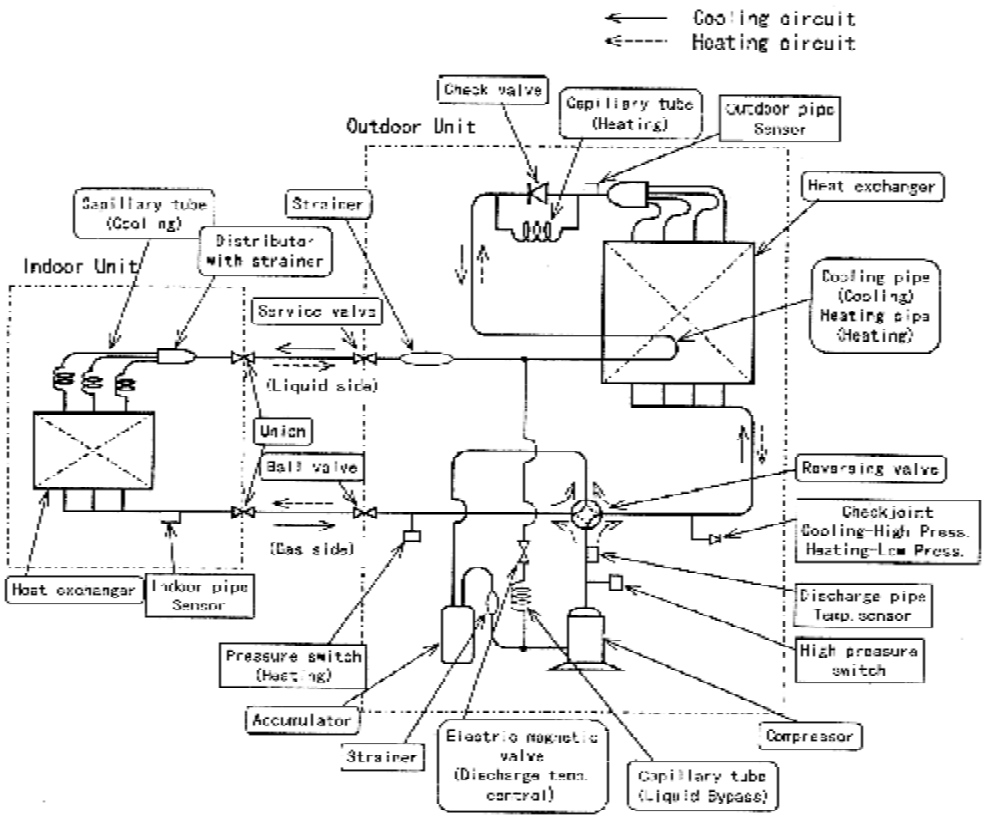
TIMER SET switch
This switch is used to set the timer operation and to set the current time.

TEST RUN switch
This switch is only used during test operation. It is not needed for normal operation.

8. REFRIGERATION CYCLE

8.1. Heating Model

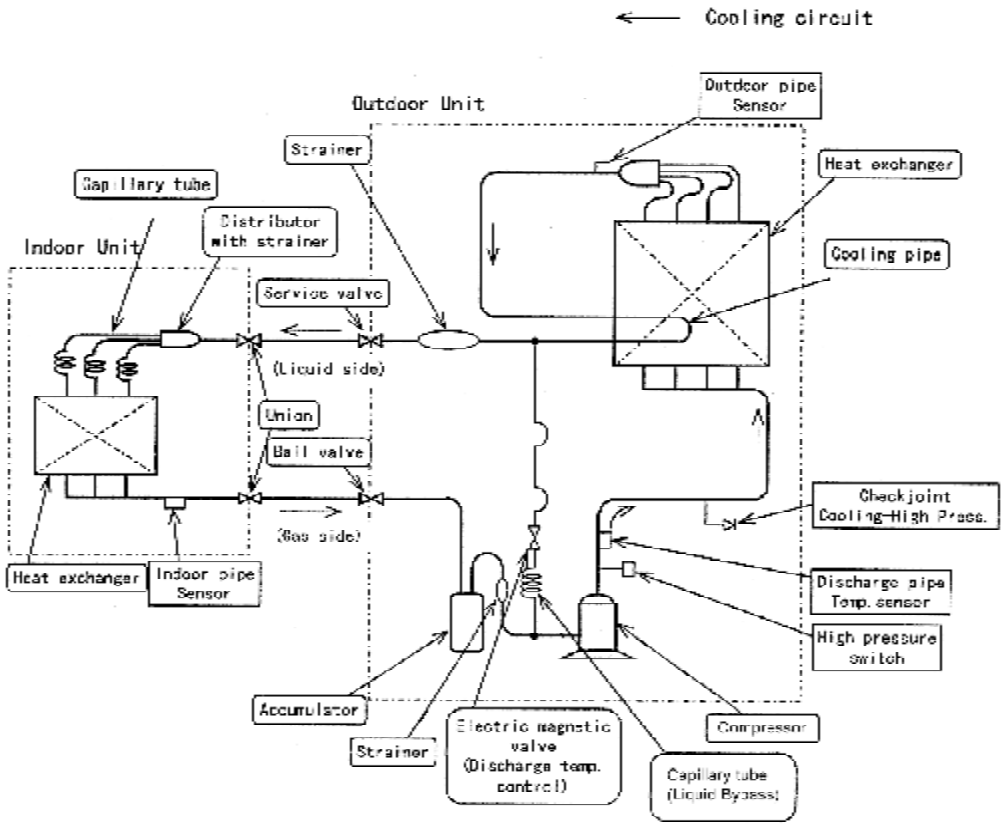
CS-A24BD3P / CU-A24BBP5 / CS-A28BD3P / CU-A28BBP5, 8 / CS-A34BD3P / CU-A34BBP5, 8 / CS-A43BD3P / CU-A43BBP8 / CS-A50BD3P / CU-A50BBP8



/ / / / / / / / / / / / / / / /

8.2. Cooling Only Model

CS-A24BD3P / CU-C24BBP5 / CS-A28BD3P / CU-C28BBP5, 8 / CS-A34BD3P / CU-C34BBP5, 8 / CS-A43BD3P / CU-C43BBP8 / CS-A50BD3P / CU-C50BBP8



9. OPERATION RANGE

Power Supply / The applicable voltage range for each unit is given in " the following table". The working voltage among the three phases must be balanced within 3% deviation from each voltage at the compressor terminals. The starting voltage must be higher than 85% of the rated voltage. / / / Power Supply

Model-CU	Unit Main Power		Applicable Voltage		Model-CU	Unit Main Power		Applicable
	Phase, Volts	Hz	Maximum	Minimum		Phase, Volts	Hz	Maximum
A24BBP5	1~220	50	242	198	A28BBP8	3N~380	50	418
A28BBP5	1~230	50	253	207	A34BBP8	3N~400	50	440
A34BBP5	1~240	50	254	216	A43BBP8	3N~415	50	457
C24BBP5					A50BBP8			
C28BBP5					C28BBP8			
C34BBP5					C34BBP8			
					C43BBP8			
					C50BBP8			

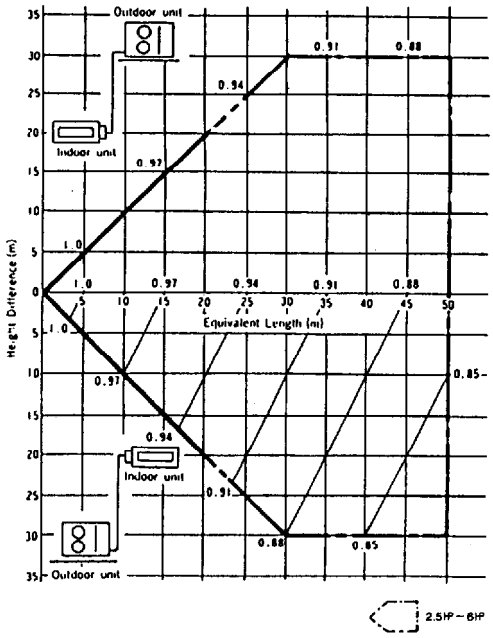
Indoor and Outdoor Temperature All Models

Operating	Hz	Indoor Temp. (D.B./W.B.) (°C)		Outdoor Temp. (D.B./W	
		Maximum	Minimum	Maximum	Mir
Cooling	50	32/23	21/15	43/-	
Heating	50	27/-	16/-	24/18	-

10. PIPE LENGTH

10.1. CORRECTION OF COOLING AND HEATING CAPACITIES

Correction of cooling and heating capacities according to the connecting pipe length. / The data of cooling capacities (marked on the name plate) are based on 5 metres connecting pipe and horizontal installation. / (Cooling)



/ / / Equivalent Length = actual pipe length + / number of elbow x ELE + number of oil / trap x ELO / ELE : equivalent length of elbow. / ELO : equivalent length of oil trap.

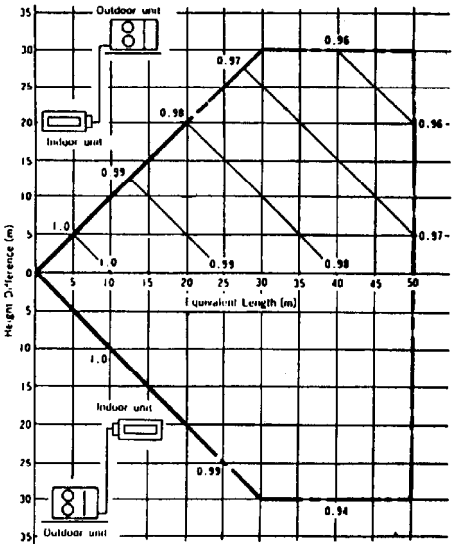
10.2. REFRIGERANT ADDITIONAL CHARGE

- The piping length exceeds 30 metres. / APPLICABLE FOR ALL MODELS

Before shipment, this air conditioner is filled with the rated amount of refrigerant subject to 30m piping length. (The rated amount of refrigerant is indicated on the name plate.) But when

the piping length exceeds 30m, additional charge is required according to the following table.

For other pipe length of other installation multiply / by the following correction factor to determine the revised cooling capacity. / / (Heating)



Outer diameter of gas side pipe mm (inch)	ELE
9.52	0.18
12.7 (1/2)	0.20
15.88 (5/8)	0.25
19.05 (3/4)	0.35

Model	Ref. Charge
2.5HP	20g per 1m
3~6HP	50g per 1m

Example : / CS-A24BD3P / In case of 30 m long pipe (one-way), the / amount of refrigerant to be replenished is: / (30 - 30) x 20 = 0g / CS-A43BD3P / In case of 50m long pipe (one-way), the / amount of refrigerant to be replenished is: / (50 - 30) x 50 = 1,000g

10.3. Piping installation by existing piping

It is possible to use the existing piping by adjusting the refrigerant gas volume. / Please do correct piping installation referring to the table below.

Heat pump type	Cooling only type	Standard piping specification					Existing piping specification (I piping)			Ac
		Liquid piping	Gas piping	Gas charge-less length	Additional gas volume		Liquid piping	Gas piping	Gas charge-less length	
		(Ømm)	(Ømm)	(mm)	(g/m)		(Ømm)	(Ømm)	(m)	
CU-A24BBP5	CU-C24BBP5	6.35	15.88	30	20		9.52	15.88	13	
CU-A28BBP5,8	CU-C28BBP5,8	9.52	15.88	30	50		12.7	15.88	17	
CU-A34BBP5,8	CU-C34BBP5,8	9.52	19.05	30	50		12.7	19.05	17	
CU-A43BBP8	CU-C43BBP8	9.52	19.05	30	50		12.7	19.05	17	
CU-A50BBP8	CU-C50BBP8	9.52	19.05	30	50		12.7	19.05	17	

Attention

- **Please do not decrease the gas piping size. (It causes the breakdown of the compressor)**
- **The equivalent piping length and the cooling and heating capacity change rate are same as the standard piping / specification.**

11. OPERATING CHARACTERISTIC

11.1. OPERATING CHARACTERISTIC

HEAT PUMP MODEL

Model	Main Power Source		Compressor Motor			Indoor Unit		Outdoor	
						Fan Motor		Fan Mo	
	Voltage	Frequency	S.C.	R.C.(A)	IPT(kW)	R.C.	IPT	R.C.	
	(V)	(Hz)	(A)	COOL/ HEAT	COOL/ HEAT	(A)	(kW)	(A)	
CS-A24BD3P CU-A24BBP5	220	50	49	10.6 / 10.5	2.31 / 2.30	0.66	0.15	0.50	
	230	50	51	10.2 / 10.1	2.31 / 2.30	0.66	0.15	0.50	
	240	50	52	9.8 / 9.8	2.31 / 2.30	0.66	0.15	0.50	
CS-A28BD3P CU-A28BBP5	220	50	50	11.35 / 11.05	2.49 / 2.41	0.84	0.19	0.50	
	230	50	52	11.05 / 10.75	2.49 / 2.41	0.84	0.19	0.50	
	240	50	54	10.75 / 10.45	2.49 / 2.41	0.84	0.19	0.50	
CS-A28BD3P CU-A28BBP8	380	50	28	4.18 / 3.98	2.49 / 2.41	0.66	0.15	0.50	
	400	50	29	4.13 / 3.93	2.49 / 2.41	0.66	0.15	0.50	
	415	50	30	4.08 / 3.88	2.49 / 2.41	0.66	0.15	0.50	
CS-A34BD3P CU-A34BBP5	220	50	94	15.3 / 15.1	3.23 / 3.18	0.84	0.19	1.00	
	230	50	99	15.4 / 15.2	3.23 / 3.18	0.84	0.19	1.00	
	240	50	103	15.5 / 15.3	3.23 / 3.18	0.84	0.19	1.00	
CS-A34BD3P CU-A34BBP8	380	50	39	5.13 / 5.23	2.93 / 3.03	0.97	0.22	1.00	
	400	50	41	5.13 / 5.23	2.93 / 3.03	0.97	0.22	1.00	
	415	50	42	5.13 / 5.23	2.93 / 3.03	0.97	0.22	1.00	
CS-A43BD3P CU-A43BBP8	380	50	58	6.63 / 6.33	3.82 / 3.67	1.15	0.26	1.10	
	400	50	58	6.63 / 6.33	3.82 / 3.67	1.15	0.26	1.10	
	415	50	58	6.63 / 6.33	3.82 / 3.67	1.15	0.26	1.10	
CS-A50BD3P CU-A50BBP8	380	50	69	7.90 / 7.80	4.54 / 4.52	1.31	0.30	1.20	
	400	50	69	7.90 / 7.80	4.56 / 4.54	1.31	0.30	1.20	
	415	50	69	7.90 / 7.80	4.54 / 4.52	1.31	0.30	1.20	

COOLING ONLY MODEL

CS-A24BD3P CU-C24BBP5	220 230 240	50 50 50	49 51 52	10.6 10.2 9.8	2.31 2.31 2.31	0.66 0.66 0.66	0.15 0.15 0.15	0.50 0.50 0.50
CS-A28BD3P CU-C28BBP5	220 230 240	50 50 50	50 52 54	11.35 11.05 10.75	2.49 2.49 2.49	0.84 0.84 0.84	0.19 0.19 0.19	0.50 0.50 0.50
CS-A28BD3P CU-C28BBP8	380 400 415	50 50 50	28 29 30	4.08 4.03 3.98	2.49 2.49 2.49	0.66 0.66 0.66	0.15 0.15 0.15	0.50 0.50 0.50
CS-A34BD3P CU-C34BBP5	220 230 240	50 50 50	94 99 103	15.3 15.4 15.5	3.23 3.23 3.23	0.84 0.84 0.84	0.19 0.19 0.19	1.00 1.00 1.00
CS-A34BD3P CU-C34BBP8	380 400 415	50 50 50	39 41 42	5.13 5.13 5.13	2.93 2.93 2.93	0.97 0.97 0.97	0.22 0.22 0.22	1.00 1.00 1.00
CS-A43BD3P CU-C43BBP8	380 400 415	50 50 50	58 58 58	6.63 6.63 6.63	3.82 3.82 3.82	1.15 1.15 1.15	0.26 0.26 0.26	1.10 1.10 1.10
CS-A50BD3P CU-C50BBP8	380 400 415	50 50 50	69 69 69	7.90 7.90 7.90	4.54 4.54 4.54	1.31 1.31 1.31	0.30 0.30 0.30	1.10 1.10 1.10

Legend: S.C. : Starting Current / R.C. : Running Current / IPT : Power Consumption

12. FAN PERFORMANCE

Fan Performance

Model		CS-A24BD3P				
External Static Pressure		Fan speed	Current (A)	Power Consumption (kW)	Power Factor (%)	RPM (r/min)	Air Volume (m^3/min)
H	69Pa(7mmAq)	Hi	0.71	0.16	98.0	1205	20
	59Pa(6mmAq)	Me	0.62	0.14	98.2	1110	17.5
	49Pa(5mmAq)	Lo	0.53	0.12	98.4	1005	15
L	49Pa(5mmAq)	Hi	0.66	0.15	98.8	1110	20
	39Pa(4mmAq)	Me	0.58	0.13	97.5	1005	17.5
	29Pa(3mmAq)	Lo	0.49	0.11	97.6	890	15

Model		CS-A28BD3P				
External Static Pressure		Fan speed	Current (A)	Power Consumption (kW)	Power Factor (%)	RPM (r/min)	Air Volume (m^3/min)
H	69Pa(7mmAq)	Hi	0.88	0.20	98.8	1310	25
	59Pa(6mmAq)	Me	0.75	0.17	98.6	1200	22
	49Pa(5mmAq)	Lo	0.66	0.15	98.8	1100	19
L	49Pa(5mmAq)	Hi	0.84	0.19	98.3	1230	25
	39Pa(4mmAq)	Me	0.71	0.16	98.0	1120	22
	29Pa(3mmAq)	Lo	0.62	0.14	98.2	990	19

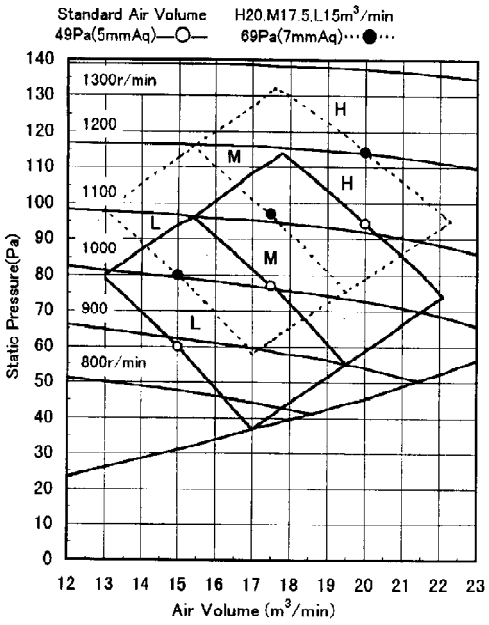
Model		CS-A34BD3P				
External Static Pressure		Fan speed	Current (A)	Power Consumption (kW)	Power Factor (%)	RPM (r/min)	Air Volume (m^3/min)
H	69Pa(7mmAq)	Hi	1.10	0.25	98.8	1330	35
	59Pa(6mmAq)	Me	0.97	0.22	98.6	1190	30
	49Pa(5mmAq)	Lo	0.80	0.18	97.8	1070	25
L	49Pa(5mmAq)	Hi	0.97	0.22	98.6	1230	35
	39Pa(4mmAq)	Me	0.80	0.18	97.8	1100	30
	29Pa(3mmAq)	Lo	0.68	0.15	95.9	950	25

Model		CS-A43BD3P				
External Static Pressure		Fan speed	Current (A)	Power Consumption (kW)	Power Factor (%)	RPM (r/min)	Air Volume (m^3/min)
H	69Pa(7mmAq)	Hi	1.21	0.27	97.0	1360	40
	59Pa(6mmAq)	Me	1.03	0.23	97.1	1230	35
	49Pa(5mmAq)	Lo	0.92	0.20	94.5	1110	30
L	49Pa(5mmAq)	Hi	1.15	0.26	98.3	1270	40
	39Pa(4mmAq)	Me	1.02	0.23	98.0	1140	35
	29Pa(3mmAq)	Lo	0.90	0.20	96.6	1000	30

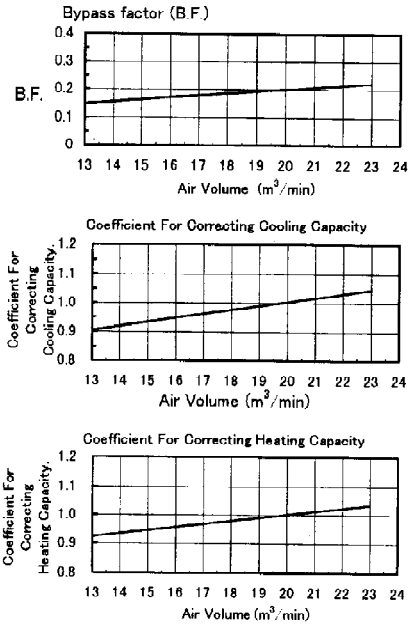
Model		CS-A50BD3P				
External Static Pressure		Fan speed	Current (A)	Power Consumption (kW)	Power Factor (%)	RPM (r/min)	Air Volume (m^3/min)
H	69Pa(7mmAq)	Hi	1.40	0.32	99.4	1340	45
	59Pa(6mmAq)	Me	1.18	0.27	99.5	1230	40
	49Pa(5mmAq)	Lo	1.02	0.23	98.0	1100	35
L	49Pa(5mmAq)	Hi	1.31	0.30	99.6	1260	45
	39Pa(4mmAq)	Me	1.09	0.25	99.7	1120	40
	29Pa(3mmAq)	Lo	0.93	0.21	98.2	980	35

■ **CS-A24BD3P**

Fan Performance Curve

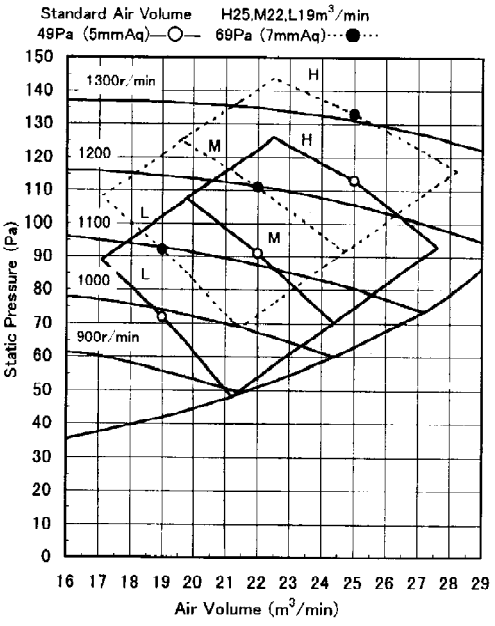


Bypass factor And Coefficient For Correcting Capacity according to Air volume Change

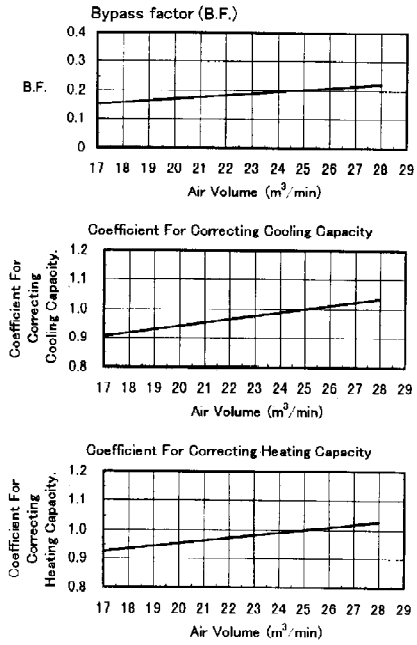


■ CS-A28BD3P

Fan Performance Curve



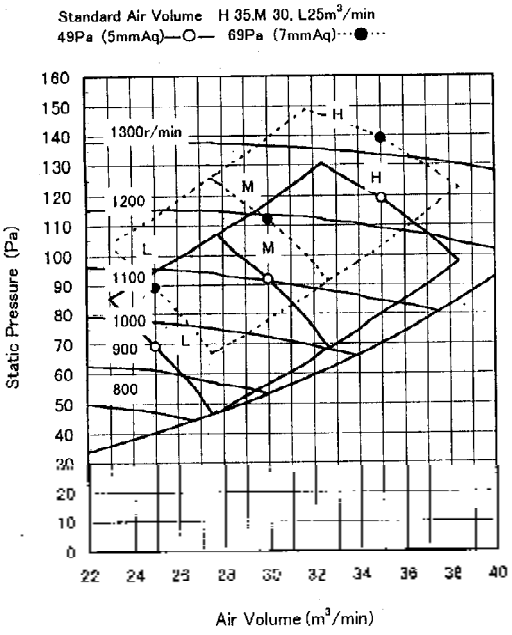
Bypass factor And Coefficient For Correcting Capacity according to Air volume Change



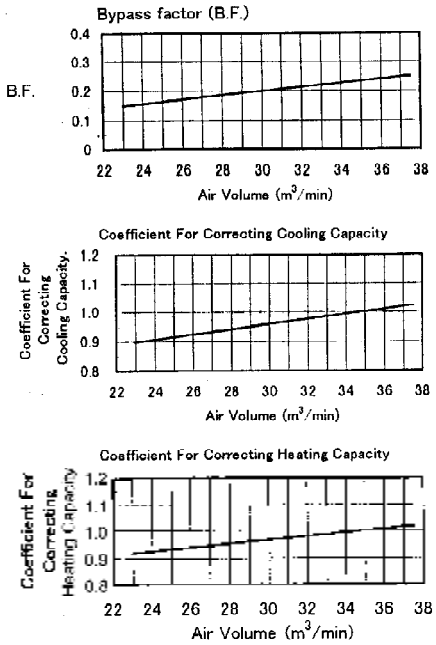
/

■ CS-A34BD3P

Fan Performance Curve

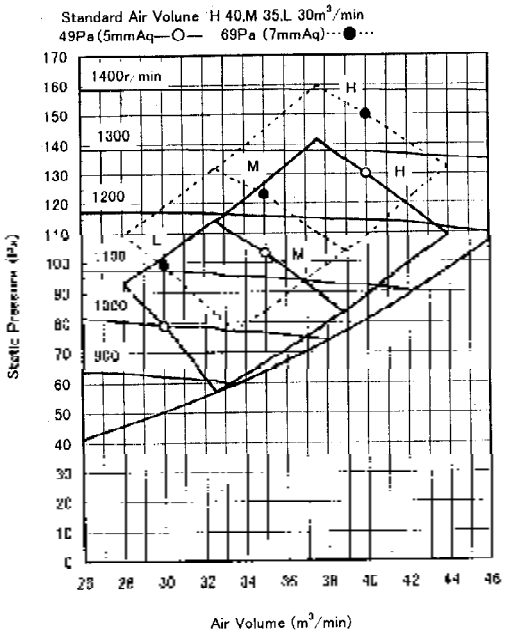


Bypass factor And Coefficient For Correcting Capacity according to Air volume Change

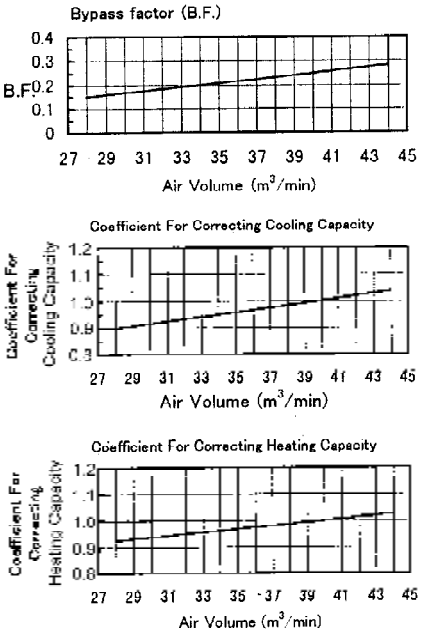


■ **CS-A43BD3P**

Fan Performance Curve

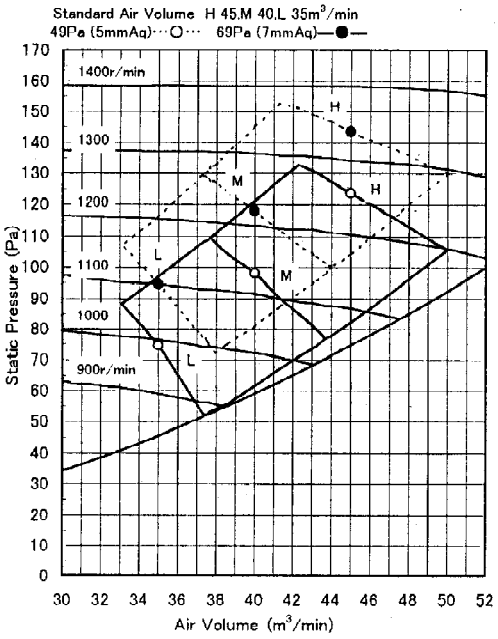


Bypass factor And Coefficient For Correcting Capacity according to Air volume Change

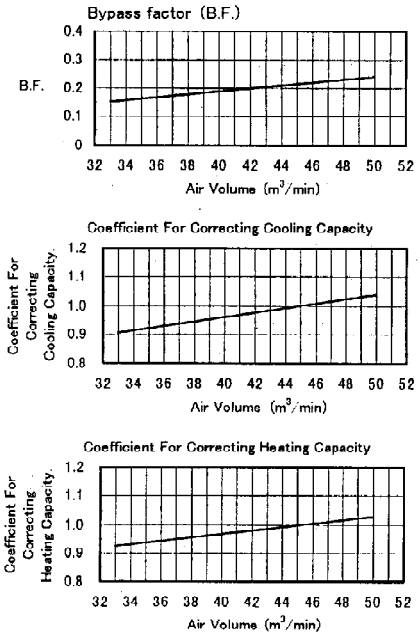


■ **CS-A50BD3P**

Fan Performance Curve



Bypass factor And Coefficient For Correcting Capacity according to Air volume Change



13. SAFETY DEVICE

■ INDOOR UNIT

Indoor unit		Model	CS-A24BD3P	CS-A28BD3P	CS-A28BD3P	CS-A34BD3P	CS-A34BD3P	CS-A43BD3P	A
For fan motor protection									
Internal protector (49F)	OFF	°C	135	135	135	135	135	135	
	ON	°C	87	87	87	87	87	87	
For control protection									
Fuse	CUT	A	3.15	3.15	3.15	3.15	3.15	3.15	

■ OUTDOOR UNIT

Outdoor unit	Heat pump model	50Hz	CU-A24BBP5	CU-A28BBP5	CU-A28BBP8	CU-A34BBP5	CU-A34BBP8	CU-A43BBP8	A
	Cooling only model	50Hz	CU-C24BBP5	CU-C28BBP5	CU-C28BBP8	CU-C34BBP5	CU-C34BBP8	CU-C43BBP8	C
For refrigerant cycle									
High pressure switch (63H1)	OFF	MPa	2.94	2.94	2.94	2.94	2.94	2.94	
	ON	MPa	2.84	2.84	2.84	2.84	2.84	2.84	
For compressor Over current protection									
Heat pump model	OFF	A	19	20	9	28	10	11	
Cooling only model	OFF	A 50Hz	19	20	9	28	10	11	
	RESET	-	Automatic	Automatic	Automatic	Automatic	Automatic	Automatic	A
Discharge temp protection									
Discharge temperature thermistor (Th1)	Com-pressor OFF	°C	115	115	115	120	120	120	
Liquid compress protection									
Crankcase heater	Input power	W	31-37	31-37	31-37	31-37	31-37	34-41	
Compressor protection									
Internal protector	OFF	°C 50Hz	160	165	120(*)	115	135	120	
	ON	°C 50Hz	90	102	90(*)	61	61	61	
	Trip time	50Hz	5-15sec/ 55A	5-15sec/ 55A	-	10sec/44A	10sec/40A	10sec/40A	1
For fan motor protection									
Internal protector (49F)	OFF	°C 50Hz	135	135	135	135	135	135	
	ON	°C 50Hz	85	85	85	85	85	85	

Outdoor unit	Heat pump model	50Hz	CU-A24BBP5	CU-A28BBP5	CU-A28BBP8	CU-A34BBP5	CU-A34BBP8	CU-A43BBP8	A
	Cooling only model	50Hz	CU-C24BBP5	CU-C28BBP5	CU-C28BBP8	CU-C34BBP5	CU-C34BBP8	CU-C43BBP8	C
Heating control (Heat pump only)									
Pressure switch	OFF	MPa	2.35	2.35	2.35	2.35	2.35	2.35	
(Fan speed)(63H2)	ON	MPa	2.25	2.25	2.25	2.25	2.25	2.25	
Cooling control									
Heat exchanger outlet temperature thermistor (Th2)	Control method		Th greater or equal to 30°C ---------- High speed Th less than 30°C ---------- 5 speed step control						
For control protection									
Fuse	CUT	A	6.3	6.3	6.3	6.3	6.3	6.3	

(*) 1MPa = 10.2kgf/cm2
(*) Head Thermostat

14. COMPONENT SPECIFICATION

Compressor

Model	Heat pump model	50Hz	CU-A24BBP5	CU-A28BBP5 CU-A28BBP8	CU-A34BBP5 CU-A34BBP8	CU-A43BBP8	CU-A50B
	Cooling only model	50Hz	CU-C24BBP5	CU-C28BBP5 CU-C28BBP8	CU-C34BBP5 CU-C34BBP8	CU-C43BBP8	CU-C50B
Compressor Model			NE41VNDT	NE44VNDT NE44VADT	ZR45KC-TFD ZR45KC-TF5	ZR57KC-TFD ZR57KC-TF5	ZR-6 TF ZR-6 TF
Compressor Type No. of Cylinders			ROTARY 1	1	SCROLL 1	1	1
Revolution		r/min	2,900	2,900	2,900	2,900	2,9
Piston Displacement		m3/h	7.27	7.73	10.73	13.42	16.
Motor Type			Direct on-line Starting				
Starting Method							
Rated Output		kW	1.9	2.0	2.8	3.5	4.
Poles			2	2	2	2	2
Insulation Class			E	E	E	E	E
Oil Type			MS32	MS32	Sontex200LT	Sontex200LT	Sontex
Charge		L	1.3	1.3	1.2	2.1	1.

Condenser

Models	Heat pump model	CU-A24BBP5	CU-A28BBP5 CU-A28BBP8	CU-A34BBP5 CU-A34BBP8	CU-A43BBP8	CU-A50BBP
	Cooling only model	CU-C24BBP5	CU-C28BBP5 CU-C28BBP8	CU-C34BBP5 CU-C34BBP8	CU-C43BBP8	CU-C50BBP

	Tube Material		Copper tube				
	Outer Diameter	mm	9.52	9.52	9.52	9.52	9.52
	Thickness	mm	0.3	0.3	0.3	0.3	0.3
	Row		2	2	2	2	2
	No. of Tubes/ Row		34	34	46	46	46
	Fin Material		Aluminium				
	Thickness	mm	0.105	0.105	0.105	0.105	0.105
	Fin Pitch	No./ inch	14	14	14	14	14
	Fin Surface		AX-Louvre fin	AX-Louvre fin	AX-Louvre fin	AX-Louvre fin	AX-Louvre fin
	Total Face Area	m^2	0.61	0.61	0.82	1.05	1.05
Fan							
	Type		Propeller Fan				
	No.of unit		1	1	2	2	2
Fan Motor							
	Starting Method		Direct on-line Starting				
	Rated Output	kW	0.05	0.05	0.05 X 2	0.05 X 2	0.055 X 2
	Poles		6	6	6	6	6
	Phase		Single-Phase	Single-Phase	Single-Phase	Single-Phase	Single-Phas
	Insulation Class		E	E	E	E	E

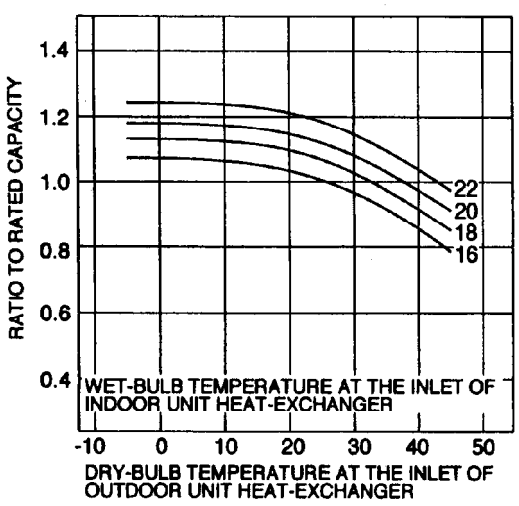
Evaporator

Models (Cooling Only Model)		CS-A24BD3P	CS-A28BD3P	CS-A34BD3P	CS-A43BD3P	CS-A
Tube Material		Copper Tube				
Outer Diameter	mm	9.53	9.53	9.53	9.53	9
Thickness	mm	0.28	0.28	0.3	0.28	0
Row		3	3	2	3	
No. of Tubes/ Row		10	10	10	10	
Fin Material		Aluminium				
Thickness	mm	0.11	0.11	0.11	0.11	0
Fin Pitch	No./ inch	14	14	14	12	
Fin Surface		Louvre-fin	Louvre-fin	Louvre-fin	Louvre-fin	Lou
Total Face Area	G	0.218	0.218	0.345	0.345	0
Evaporator Fan Type		Sirocco Fan				
No./Unit		2	2	2	2	
Evaporator Fan motor		Direct On-Line Starting				
Starting						
Rated Output	kW	0.085	0.115	0.15	0.26	0
Poles		4	4	4	4	
Phase		Single-Phase	Single-Phase	Single-Phase	Single-Phase	Singl
Insulation		E	E	E	E	

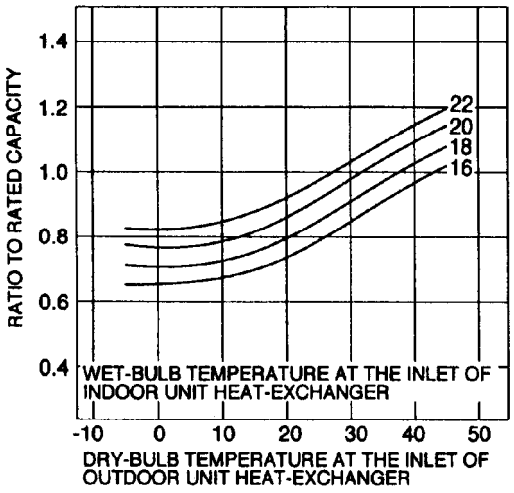
15. CAPACITY AND POWER CONSUMPTION

15.1. COOLING CAPACITY CURVE, COOLING POWER CONSUMPTION CURVE

- COOLING CAPACITY CURVE



■ COOLING POWER CONSUMPTION CURVE



■ RATED COOLING CAPACITY, RATED COOLING POWER CONSUMPTION

MODEL NAME	RATED COOLING STANDARD	
	CAPACITY (kW)	POWER CONSUMPTION (kW)
CS-A24BD3P/CU-A24BBP5	6.50	2.59
CS-A28BD3P/CU-A28BBP5	7.30	2.69
CS-A28BD3P/CU-A28BBP8	7.30	2.69
CS-A34BD3P/CU-A34BBP5	10.45	3.95
CS-A34BD3P/CU-A34BBP8	10.45	3.65
CS-A43BD3P/CU-A43BBP8	13.00	4.53
CS-A50BD3P/CU-A50BBP8	14.50	5.10
CS-A24BD3P/CU-C24BBP5	6.50	2.59
CS-A28BD3P/CU-C28BBP5	7.30	2.69
CS-A28BD3P/CU-C28BBP8	7.30	2.69
CS-A34BD3P/CU-C34BBP5	10.45	3.95
CS-A34BD3P/CU-C34BBP8	10.45	3.65
CS-A43BD3P/CU-C43BBP8	13.00	4.53
CS-A50BD3P/CU-C50BBP8	14.50	5.10

- Calculation of actual cooling capacity and power consumption

Example / CS-A28BD3P / CU-C28BBP8

- Calculation of the actual cooling capacity and power consumption for the following cooling conditions: Indoor temperature of 18°C (wet-bulb temperature) and outdoor temperature of 40°C (dry-bulb temperature).

Calculation method

- Find the cooling capacity ratio and power consumption ratio from the cooling capacity graph and power consumption graph for model CS-A28BD3P / CU-C28BBP8.

1. The cooling capacity ratio indicated at the intersection between an outdoor unit heat exchanger inlet air temperature of 40°C on the horizontal axis and an indoor unit heat exchanger inlet temperature on 18°C is 0.92.

2. The cooling power consumption ratio from the same intersection on the power consumption graph is 1.02.

- Thus, / Actual cooling capacity = cooling capacity ratio x rated cooling = 0.92 x 7.80 = 7.18 (kW)

Actual cooling power consumption = cooling power consumption x rated power consumption = 1.02 x 2.70 = 2.75 (kW)

15.2. PERFORMANCE DATA

Model

CS-A24BD3P/CU-A24BBP5, CS-C24BD3P/CU-C24BBP5

COOLING PERFORMANCE

Ambient Return Air		Temperature Air Entering Condenser (°C D.B.)														
		25°C			30°C			35°C			40°C			45°C		
		TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IP
D.B.	W.B.	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kV
23	17	6.84	5.98	2.09	6.58	5.88	2.25	6.25	5.76	2.39	5.86	5.51	2.55	5.40	5.07	2.6
	19	7.17	5.19	2.25	6.91	5.13	2.39	6.58	5.01	2.55	6.25	4.88	2.71	5.86	4.68	2.8
	22	7.76	4.02	2.49	7.50	4.02	2.62	7.17	3.98	2.78	6.84	3.93	2.91	6.44	3.82	3.0
25	17	6.80	5.95	2.09	6.54	5.84	2.25	6.21	5.72	2.39	5.82	5.47	2.55	5.36	5.04	2.6
	19	7.12	5.16	2.25	6.86	5.10	2.39	6.54	4.98	2.55	6.21	4.85	2.71	5.82	4.65	2.8
	22	7.72	3.99	2.49	7.46	4.00	2.62	7.12	3.95	2.78	6.80	3.90	2.91	6.41	3.80	3.0
27	17	6.76	5.91	2.09	6.50	5.81	2.25	6.18	5.69	2.39	5.79	5.44	2.55	5.33	5.01	2.6
	19	7.09	5.13	2.25	6.83	5.07	2.39	6.50	4.95	2.55	6.18	4.82	2.71	5.79	4.63	2.8
	22	7.67	3.96	2.49	7.41	3.97	2.62	7.09	3.93	2.78	6.76	3.88	2.91	6.37	3.77	3.0
29	17	6.72	5.88	2.09	6.46	5.78	2.25	6.15	5.66	2.39	5.76	5.41	2.55	5.30	4.98	2.6
	19	7.05	5.10	2.25	6.79	5.05	2.39	6.46	4.92	2.55	6.15	4.79	2.71	5.76	4.60	2.8
	22	7.63	3.95	2.49	7.37	3.95	2.62	7.05	3.91	2.78	6.72	3.86	2.91	6.33	3.75	3.0
32	17	6.67	5.83	2.09	6.42	5.73	2.25	6.09	5.61	2.39	5.71	5.37	2.55	5.26	4.94	2.6
	19	6.99	5.06	2.25	6.73	5.00	2.39	6.42	4.89	2.55	6.09	4.76	2.71	5.71	4.57	2.8
	22	7.57	3.91	2.49	7.32	3.92	2.62	6.99	3.88	2.78	6.67	3.82	2.91	6.29	3.73	3.0

Legend : BF Bypass Factor 0.20 SHC Sensible Heat Capacity TC Total Cooling Capacity / CAPACITY SELECTION NOTES / (1) The table above is based on unit nominal evaporator airflow, / correction factor must therefore be applied for selections / away from this condition. /

COOLING CORRECTION FACTORS				
EVAP. AIR FLOW m3/ min (l/s)	14 (233)	17 (283)	20 (333)	23 (383)
SHC Sensible Heat Capacity	0.86	0.93	1	1.08
TC Total Cooling Capacity	0.92	0.96	1	1.05

Model

CS-A28BD3P/CU-A28BBP5, CS-C28BD3P/CU-C28BBP5, CS-A28BD3P/CU-A28BBP8, CS-A28BD3P/CU-C28BBP8

COOLING PERFORMANCE

Ambient Return Air		Temperature Air Entering Condenser (°C D.B.)														
		25°C			30°C			35°C			40°C			45°C		
		TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IP
D.B.	W.B.	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kV
23	17	7.68	7.08	2.21	7.39	6.95	2.37	7.02	6.80	2.54	6.58	6.38	2.70	6.06	5.87	2.8
	19	8.06	6.17	2.37	7.76	6.10	2.54	7.39	5.94	2.70	7.02	5.79	2.86	6.58	5.54	3.0
	22	8.72	4.82	2.64	8.42	4.82	2.78	8.06	4.76	2.94	7.68	4.69	3.08	7.24	4.56	3.2
25	17	7.64	7.03	2.21	7.35	6.90	2.37	6.97	6.76	2.54	6.53	6.33	2.70	6.02	5.83	2.8
	19	8.00	6.13	2.37	7.71	6.05	2.54	7.35	5.91	2.70	6.97	5.75	2.86	6.53	5.51	3.0
	22	8.67	4.79	2.64	8.37	4.79	2.78	8.00	4.74	2.94	7.64	4.66	3.08	7.20	4.54	3.2
27	17	7.59	7.00	2.21	7.30	6.87	2.37	6.94	6.72	2.54	6.50	6.30	2.70	5.99	5.81	2.8
	19	7.96	6.10	2.37	7.67	6.02	2.54	7.30	5.87	2.70	6.94	5.72	2.86	6.50	5.48	3.0
	22	8.61	4.76	2.64	8.32	4.76	2.78	7.96	4.71	2.94	7.59	4.64	3.08	7.15	4.51	3.2
29	17	7.55	6.96	2.21	7.26	6.83	2.37	6.90	6.69	2.54	6.47	6.27	2.70	5.95	5.77	2.8
	19	7.92	6.06	2.37	7.63	5.99	2.54	7.26	5.84	5.70	6.90	5.69	2.86	6.47	5.45	3.0
	22	8.57	4.74	2.64	8.28	4.74	2.78	7.92	4.68	2.94	7.55	4.61	3.08	7.11	4.48	3.2
32	17	7.50	6.90	2.21	7.21	6.78	2.37	6.84	6.63	2.54	6.41	6.21	2.70	5.91	5.72	2.8
	19	7.85	6.02	2.37	7.56	5.94	2.54	7.21	5.80	2.70	6.84	5.64	2.86	6.41	5.41	3.0
	22	8.50	4.70	2.64	8.22	4.70	2.78	7.85	4.65	2.94	7.50	4.57	3.08	7.06	4.45	3.2

Legend : BF Bypass Factor 0.20 SHC Sensible Heat Capacity TC Total Cooling Capacity / CAPACITY SELECTION NOTES / (1) The table above is based on unit nominal evaporator airflow, / correction factor must therefore be applied for selections / away from this condition. /

COOLING CORRECTION FACTORS				
EVAP. AIR FLOW m3/ min (l/s)	79 (316)	22 (366)	25 (416)	28 (466)
SHC Sensible Heat Capacity	0.86	0.93	1	1.04
TC Total Cooling Capacity	0.92	0.96	1	1.04

Model

CS-A34BD3P/CU-A34BBP5, CS-A34BD3P/CU-C34BBP5, CS-A34BD3P/CU-A34BBP8, CS-A34BD3P /CU-C34BBP8

COOLING PERFORMANCE

Ambient Return Air		Temperature Air Entering Condenser (°C D.B.)														
		25°C			30°C			35°C			40°C			45°C		
		TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IP
D.B.	W.B.	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
23	17	11.00	9.99	2.95	10.58	9.82	3.17	10.05	9.63	3.38	9.41	9.22	3.60	8.67	8.85	3.7
	19	11.53	8.59	3.17	11.11	8.50	3.38	10.58	8.31	3.60	10.05	8.10	3.82	9.41	7.78	4.0
	22	12.48	6.49	3.53	12.06	6.52	3.71	11.53	6.47	3.92	11.00	6.40	4.11	10.36	6.24	4.3
25	17	10.93	9.93	2.95	10.51	9.76	3.17	9.98	9.58	3.38	9.36	9.16	3.60	8.62	8.79	3.7
	19	11.46	8.53	3.17	11.04	8.44	3.38	10.51	8.26	3.60	9.98	8.05	3.82	9.36	7.74	4.0
	22	12.41	6.46	3.53	11.98	6.47	3.714	11.46	6.43	3.92	10.93	6.36	4.11	10.30	6.20	4.3
27	17	10.87	9.87	2.95	10.45	9.70	3.17	9.93	9.52	3.38	9.30	9.11	3.60	8.57	8.74	3.7
	19	11.39	8.48	3.17	10.97	8.39	3.38	10.45	8.21	3.60	9.93	8.014	3.82	9.30	7.69	4.0
	22	12.33	6.42	3.53	11.91	6.45	3.71	11.39	6.39	3.92	10.87	6.32	4.11	10.24	6.16	4.3
29	17	10.73	9.74	10.95	10.32	9.58	3.17	9.79	9.39	3.38	9.18	9.00	3.60	8.46	8.63	3.7
	19	11.33	8.44	3.17	10.92	8.36	8.38	10.39	8.18	3.60	9.88	7.96	3.82	9.25	7.95	4.0
	22	12.26	6.39	3.53	11.86	6.41	3.71	11.33	6.36	3.92	10.81	6.29	4.11	10.18	6.14	4.3
32	17	10.73	9.74	2.95	10.32	9.58	3.17	9.79	9.39	3.38	9.18	9.00	3.60	8.46	8.63	3.7
	19	11.24	8.37	3.17	10.83	8.29	3.38	10.32	8.10	3.60	9.79	7.90	3.82	9.18	7.59	4.0
	22	12.17	6.33	3.53	11.76	6.36	3.71	11.24	6.31	3.92	10.73	6.24	4.11	10.11	6.09	4.3

Legend: BF Bypass Factor 0.20 SHC Sensible Heat Capacity TC Total Cooling Capacity / CAPACITY SELECTION NOTES / (1) The table above is based on unit nominal evaporator airflow, / correction factor must therefore be applied for selections / away from this condition. /

COOLING CORRECTION FACTORS				
EVAP. AIR FLOW m^3/ min (l/s)	28 (467)	32 (533)	35 (583)	38 (633)
SHC Sensible Heat Capacity	0.91	0.96	1	1.05
TC Total Cooling Capacity	0.94	0.98	1	1.03

Model
CS-A43BD3P/CU-A43BBP8, CS-A43BD3P/CU-C43BBP8

COOLING PERFORMANCE

Ambient Return Air		Temperature Air Entering Condenser (°C D.B.)														
		25°C			30°C			35°C			40°C			45°C		
		TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IP
D.B.	W.B.	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
23	17	13.69	11.83	3.98	13.16	11.63	4.27	12.50	11.41	4.56	11.71	10.92	4.85	10.79	10.48	5.1
	19	14.35	10.17	4.27	13.82	10.06	4.56	13.16	9.84	4.85	12.50	9.59	5.14	11.71	9.21	5.3
	22	15.53	7.70	4.75	15.00	7.72	5.00	14.35	7066	5.29	13.69	7.58	5.53	12.89	7.39	5.8
25	17	13.60	11.75	3.98	13.08	11.56	4.27	12.43	11.34	4.56	11.63	10.85	4.85	10.73	10.42	5.1
	19	14.25	10.10	4.27	13.73	10.00	4.56	13.08	9.78	4.85	12.43	9.53	5.14	11.63	9.15	5.3
	22	15.43	7.64	4.75	14.90	7.67	5.00	14.25	7.61	5.29	13.60	7.53	5.53	12.82	7.34	5.8
27	17	13.52	11.82	3.98	13.00	11.61	4.27	12.35	11.39	4.56	11.57	10.90	4.85	10.66	10.35	5.1
	19	14.17	10.18	4.27	13.65	10.07	4.56	13.00	9.85	4.85	12.35	9.60	5.14	11.57	9.22	5.3
	22	15.34	7.74	4.75	14.82	7.77	5.00	14.17	7.71	5.29	13.52	7.61	5.53	12.74	7.43	5.8
29	17	13.45	11.62	3.98	12.93	11.43	4.27	12.28	11.21	4.56	11.51	10.73	4.85	10.60	10.30	5.1
	19	14.10	10.00	4.27	13.58	9.89	4.56	12.93	9.67	4.85	12.28	9.42	5.14	11.51	9.05	5.3
	22	15.26	7.56	4.75	14.74	7.58	5.00	14.10	7.53	5.29	13.45	7.45	5.53	12.98	7.26	5.8
32	17	13.34	11.53	3.98	12.83	11.34	4.27	12.19	11.13	4.56	11.45	10.65	4.85	10.52	10.22	5.1
	19	13.98	9.91	4.27	13.47	9.81	4.56	12.83	9.59	4.85	12.19	9.35	5.14	11.45	8.99	5.3
	22	12.80	7.50	4.75	14.63	7.53	5.00	13.98	7.47	5.29	13.14	7.59	5.53	12.57	7.50	5.8

Legend: BF Bypass Factor 0.20 SHC Sensible Heat Capacity TC Total Cooling Capacity / CAPACITY SELECTION NOTES / (1) The table above is based on unit nominal evaporator airflow, / correction factor must therefore be applied for selections / away from this condition. /

COOLING CORRECTION FACTORS				
EVAP. AIR FLOW m^3/ min (l/s)	32 (533)	36 (600)	40 (666)	44 (733)
SHC Sensible Heat Capacity	0.91	0.95	1	1.06
TC Total Cooling Capacity	0.94	0.97	1	1.04

Model
CS-A50BD3P/CU-A50BBP8, CS-A50BD3P/CU-C50BBP8

COOLING PERFORMANCE

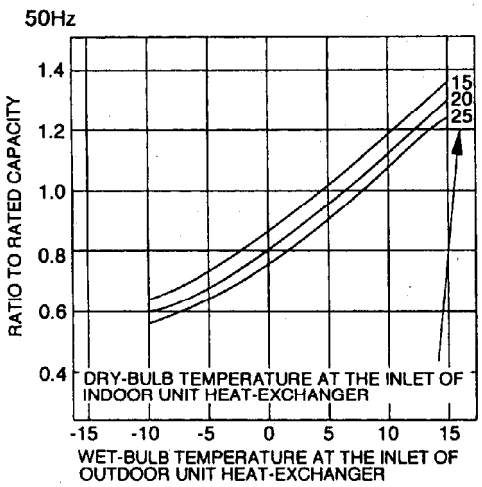
Ambient Return Air		Temperature Air Entering Condenser (°C D.B.)														
		25°C			30°C			35°C			40°C			45°C		
		TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IPT	TC	SHC	IP
D.B.	W.B.	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
23	17	15.27	13.41	4.42	14.98	13.17	4.74	13.94	12.91	5.06	13.06	12.34	5.39	12.04	11.37	5.6
	19	16.00	11.64	4.74	15.41	11.51	5.06	14.68	11.23	5.39	13.94	10.93	5.72	13.06	10.49	5.9
	22	17.32	9.00	5.28	16.73	9.01	5.55	16.00	8.92	5.88	15.27	8.79	6.14	14.38	8.56	6.4
25	17	15.17	13.33	4.42	14.58	13.09	4.74	13.86	12.83	5.06	12.98	12.26	5.39	11.96	11.30	5.6
	19	15.90	11.56	4.74	15.31	11.43	5.06	14.58	11.16	5.39	13.86	10.86	5.72	12.98	10.42	5.9
	22	17.21	8.95	5.28	16.63	8.96	5.55	15.90	8.86	5.88	15.17	8.74	6.14	14.29	8.50	6.4
27	17	15.08	13.24	4.42	14.50	13.02	4.74	13.78	12.75	5.06	12.91	12.20	5.39	11.89	11.23	5.6
	19	15.81	11.50	4.74	15.23	11.36	5.06	14.50	11.10	5.39	13.78	10.80	5.72	12.91	10.36	5.9
	22	17.11	8.89	5.28	16.53	8.90	5.55	15.81	8.80	5.88	15.08	8.69	6.14	14.21	8.45	6.4
29	17	15.00	13.18	40.42	14.42	12.94	4.74	13.70	12.69	5.06	12.84	12.13	5.39	11.83	11.18	5.6
	19	15.72	11.44	4.74	15.15	11.31	5.06	14.42	11.03	5.39	13.70	10.74	5.72	12.84	10.31	5.9
	22	17.02	8.84	5.28	16.44	8.85	5.55	15.72	8.77	5.88	15.00	8.64	6.14	14.14	8.42	6.4
32	17	14.88	13.07	4.42	14.31	12.84	4.74	13.59	12.58	5.06	12.74	12.04	5.39	11.73	11.08	5.6
	19	15.60	11.35	4.74	15.03	11.21	5.06	14.31	10.95	5.39	13.59	10.66	5.72	12.74	10.23	5.9
	22	16.89	8.78	5.28	16.31	8.79	5.55	15.60	8.69	5.88	14.88	8.58	6.14	14.02	8.34	6.4

Legend: BF Bypass Factor 0.20 SHC Sensible Heat Capacity TC Total Cooling Capacity / CAPACITY SELECTION NOTES / (1) The table above is based on unit nominal evaporator airflow, / correction factor must therefore be applied for selections / away from this condition. /

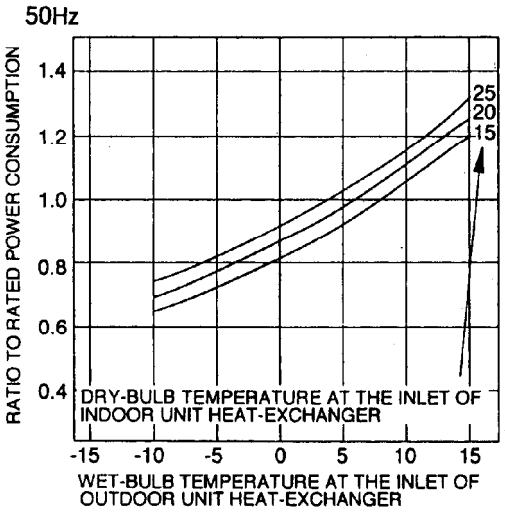
COOLING CORRECTION FACTORS				
EVAP. AIR FLOW m3/ min (l/s)	37 (617)	41 (683)	45 (750)	49 (817)
SHC Sensible Heat Capacity	0.9	0.93	1	1.07
TC Total Cooling Capacity	0.94	0.97	1	1.03

15.3. HEATING CAPACITY CURVE, HEATING POWER CONSUMPTION CURVE (HEAT PUMP MODEL ONLY)

■ HEATING CAPACITY CURVE



HEATING POWER CONSUMPTION CURVE



RATED HEATING CAPACITY, RATED HEATING POWER CONSUMPTION

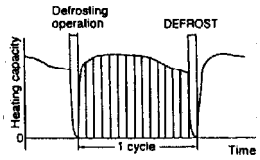
MODEL NAME	RATED HEATING STANDARD	
	CAPACITY (kW)	POWER CONSUMPTION (kW)
CS-A24BD3P/CU-A24BBP5	7.10	2.50
CS-A28BD3P/CU-A28BBP5	7.75	2.61
CS-A28BD3P/CU-A28BBP8	7.75	2.40
CS-A34BD3P/CU-A34BBP5	11.20	3.55
CS-A34BD3P/CU-A34BBP8	11.20	3.40
CS-A43BD3P/CU-A43BBP8	14.20	3.90
CS-A50BD3P/CU-A50BBP8	15.70	5.09

<Precautions on using capacity and electrical characteristics curves>

- **Heating capacity when the unit is frosted over or while being defrosted will vary depending on outdoor temperature ('CW8) and the amount c frost. Heating capacity performance must be compensated because it does not take into account the capacity drop incurred when the unit is frosted over and while it is being defrosted. Therefore, to obtain the integral heating capacity in consideration 01 overfrosting and defrost operations. Heating capacity must be multiplied by the compensation coefficient below.**
- **Heating capacity compensation coefficient for heating in frosted situations.**

Wet-bulb temperature at inlet of outdoor unit heat exchanger('CWB)	-10	-8	-6	-4	-2	0	1	2	4	6
Heating capacity compensation coefficient	0.93	0.93	0.92	0.89	0.87	0.86	0.87	0.89	0.95	1.0

※1
Integral heating capacity = (Heating capacity by heating capacity performance) × (Heating capacity compensation coefficient) <kW>



※1
Integral heating capacity is obtained by integrating the capacity consumed in 1 defrost cycle into the normal heating capacity, and calculating this value as an hourly figure. One defrost cycle is determined as the time from when a defrost operation stops (heating starts) until the next heating operation starts (see ligure on left)

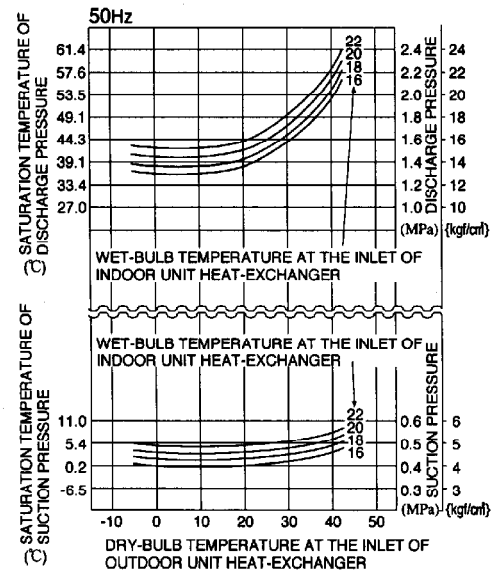
16. DISCHARGE AND SUCTION PRESSURE

16.1. SATURATION TEMPERATURE OF DISCHARGE AND SUCTION PRESSURE

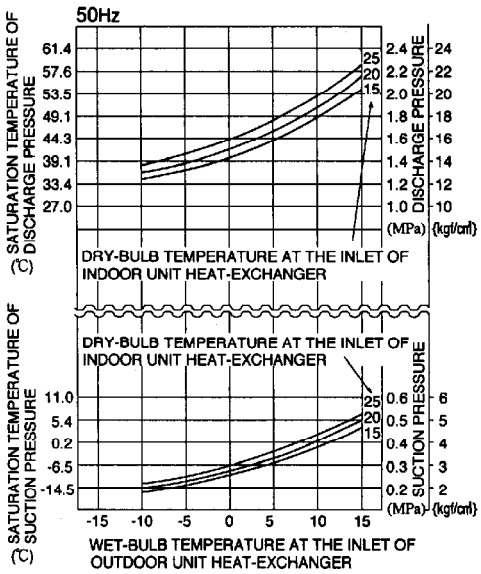
• **Commonness TO THE ALL MODEL**

• **SATURATION TEMPERATURE OF DISCHARGE AND SUCTION PRESSURE**

COOLING

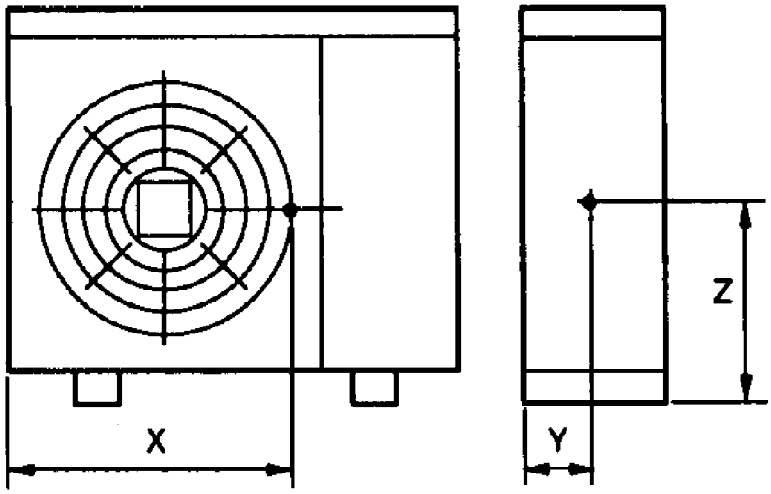


HEATING (Heat pump model only)

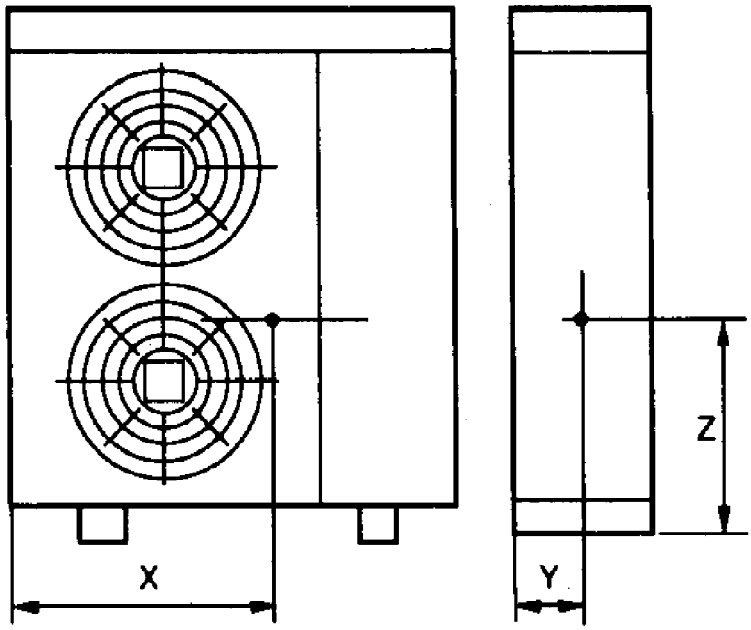


17. POSITION OF THE CENTRE GRAVITY

24BB ~ 28BB



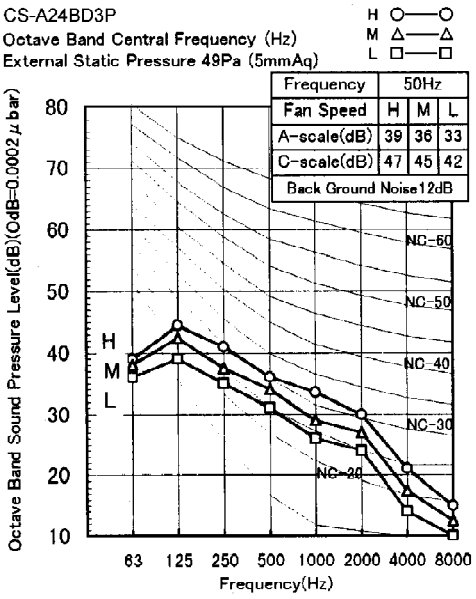
34BB ~ 50BB



MODEL NAME	OUTSIDE DIMENSIONS			NET WEIGHT	CENTRE OF GRAVITY		
	WIDTH (mm)	DEPTH (mm)	HEIGHT (mm)	kg	X (mm)	Y (mm)	Z (mm
CU-A24BBP5	900	900	320	81	560	160	360
CU-A28BBP5	900	900	320	82	580	160	340
CU-A28BBP8	900	900	320	82	580	160	340
CU-A34BBP5	1220	900	320	97	590	160	460
CU-A34BBP8	1220	900	320	97	590	160	460
CU-A43BBP8	1220	1100	320	114	720	160	460
CU-A50BBP8	1220	1100	320	116	720	160	460
CU-C24BBP5	900	900	320	80	560	160	360
CU-C28BBP5	900	900	320	81	580	160	340
CU-C28BBP8	900	900	320	81	580	160	340
CU-C34BBP5	1220	900	320	95	590	160	460
CU-C34BBP8	1220	900	320	95	590	160	460
CU-C43BBP8	1220	1100	320	111	720	160	460
CU-C50BBP8	1220	1100	320	114	720	160	460

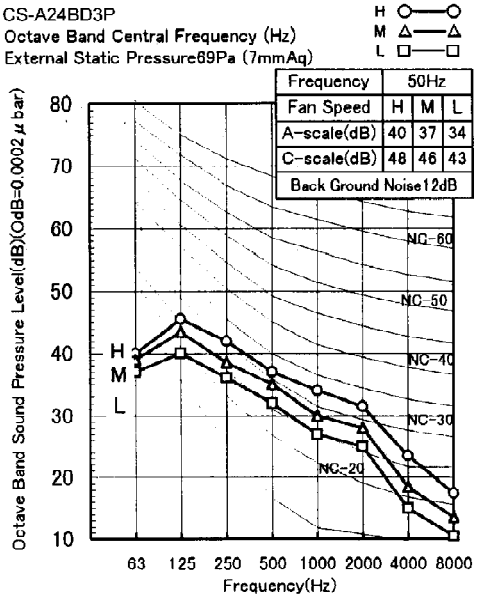
18. SOUND DATA

CS-A24BD3P
Octave Band Central Frequency (Hz)
External Static Pressure 49Pa (5mmAq)



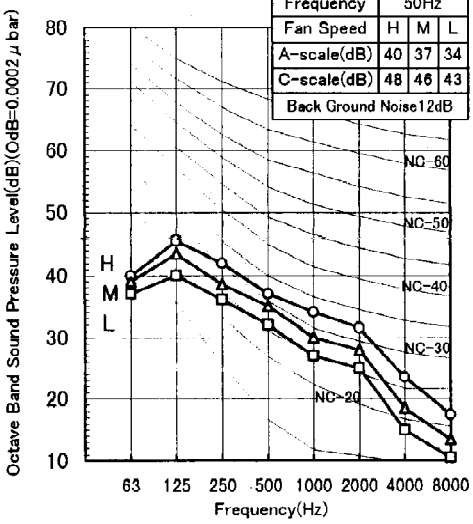
Frequency	50Hz		
Fan Speed	H	M	L
A-scale(dB)	39	36	33
C-scale(dB)	47	45	42
Back Ground Noise12dB			

CS-A24BD3P
Octave Band Central Frequency (Hz)
External Static Pressure69Pa (7mmAq)



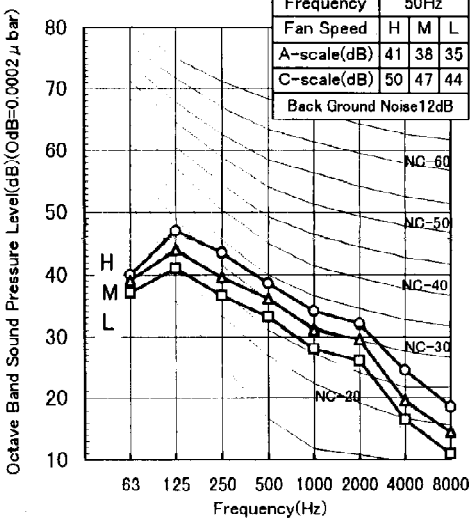
Frequency	50Hz		
Fan Speed	H	M	L
A-scale(dB)	40	37	34
C-scale(dB)	48	46	43
Back Ground Noise12dB			

CS-A28BD3P
Octave Band Central Frequency (Hz)
External Static Pressure 49Pa (5mmAq)

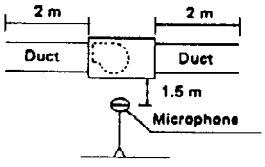


Frequency	50Hz		
Fan Speed	H	M	L
A-scale(dB)	40	37	34
C-scale(dB)	48	46	43
Back Ground Noise12dB			

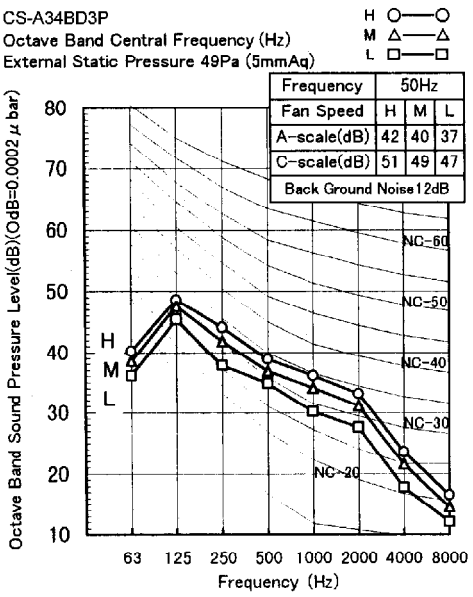
CS-A28BD3P
Octave Band Central Frequency (Hz)
External Static Pressure 69Pa (7mmAq)



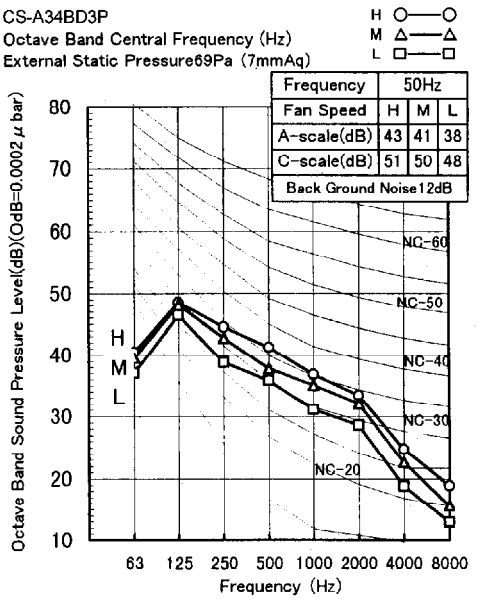
Frequency	50Hz		
Fan Speed	H	M	L
A-scale(dB)	41	38	35
C-scale(dB)	50	47	44
Back Ground Noise12dB			



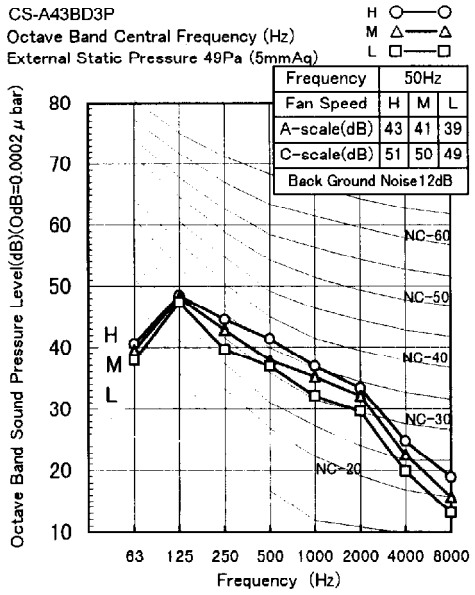
CS-A34BD3P
Octave Band Central Frequency (Hz)
External Static Pressure 49Pa (5mmAq)



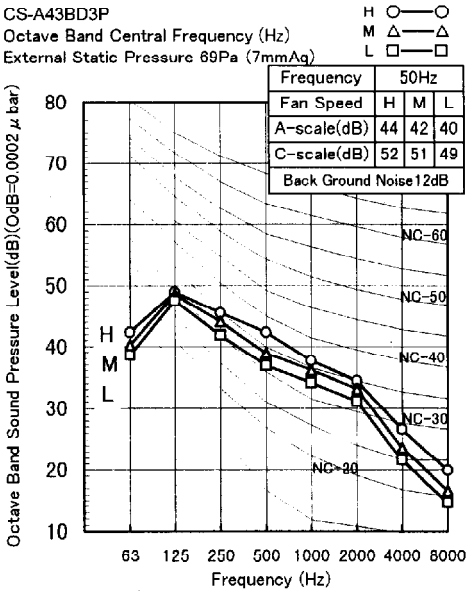
CS-A34BD3P
Octave Band Central Frequency (Hz)
External Static Pressure69Pa (7mmAq)

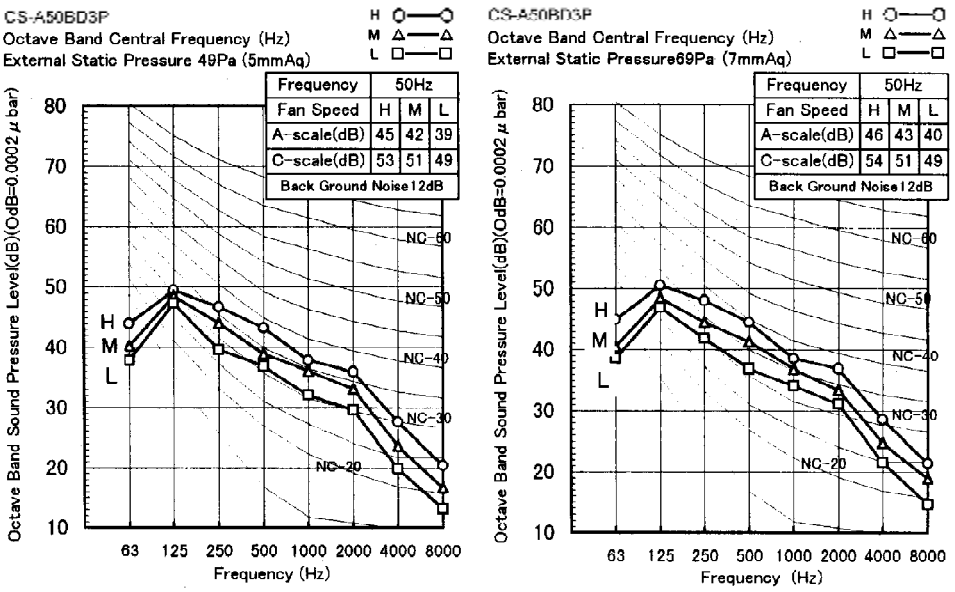


CS-A43BD3P
Octave Band Central Frequency (Hz)
External Static Pressure 49Pa (5mmAq)

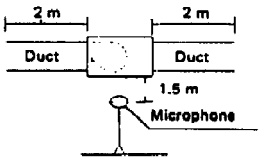


CS-A43BD3P
Octave Band Central Frequency (Hz)
External Static Pressure 69Pa (7mmAq)





NOTE:
: Microphone Position

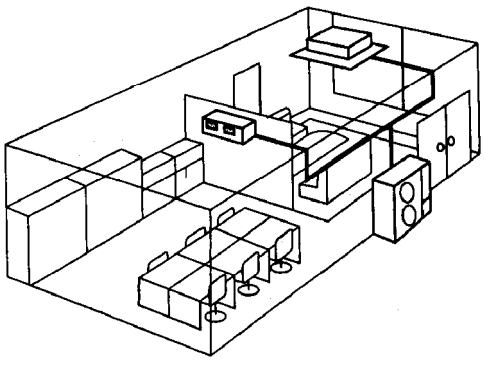


19. TWIN AND TRIPLE

19.1. TWIN

19.1.1. Operation

- Simultaneous air conditioning of wide spaces and corners is possible.
- Master units and slave-units can be set automatically in twin and triple systems. No address setting is necessary.
- Multiple indoor units can be operated simultaneously with a single remote control unit. Note that individual operation is not possible.



: Outdoor unit capacity
: Indoor unit capacity
(Figures indicate capacity ratios in combination.)

OUTDOOR UNIT	SIMULTANEOUS TWIN OPERATION
	STANDARD
43BB	43BB 24BD3 + 24BD3
50BB	50BB 28BD3 + 28BD3

(Twin operation setting)

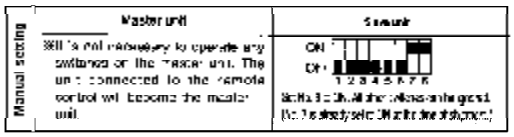
- The master units and slave units are set automatically when the power is turned on. At this time, the indoor unit which is connected to the remote control unit becomes the master unit. / (If automatic setting is not possible, carry out the settings manually.)

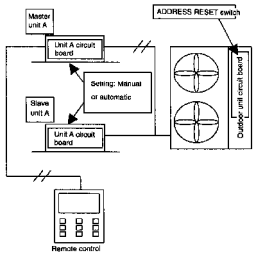
- Install the remote control unit to the master unit. (It cannot be connected to slave units.)

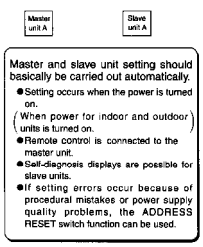
- The remote control thermostat can also be set.

- Optional circuit boards can only be installed to the master unit.

- Setting the master unit and slave units can also be carried out manually by using DIP switches. However, manual settings will always take priority. If you have made manual settings but would like to return to using automatic settings, set all slave unit DIP switches (refer to the table below) to the OFF position, and then press the ADDRESS RESET switch on the outdoor unit (SW3 on the outdoor unit printed circuit board). / (Do not mix manual settings and automatic settings.)






Master unit A
Slave unit A
Master and slave unit setting should basically be carried out automatically.
● Setting occurs when the power is turned on.
(When power for indoor and outdoor units is turned on.
● Remote control is connected to the master unit.
● Self-diagnosis displays are possible for slave units.
● If setting errors occur because of procedural mistakes or power supply quality problems, the ADDRESS RESET switch function can be used.

/ / / / Automatic address setting for twin system

/ Procedure: Turn on the power supply for the indoor and outdoor units. / Operation: Automatic address setting will start 10 to 30 seconds after the power supply is turned on, and will be completed / after about 1 minute. / /

If the power supplies for the indoor unit and outdoor unit cannot be turned on at the same time, turn on the power supply for the outdoor unit, the indoor unit which is connected to the remote control, and then the other indoor units in that order.

If the order of turning on the power supply is incorrect, the master unit setting may overlap. In such a case, turn on the power supplies for all units in the correct order as given above, or carry out a twin/triple automatic address reset (press dip switch 3 on the outdoor unit continuously for seconds or longer).

- **The indoor unit which is connected to the remote control unit (receptor) will have priority for becoming the master unit.**
- **The master unit thermostat will be used as the indoor temperature thermostat. If the master unit thermostat is turned on, the slave unit thermostats cannot be adjusted even if they happen to be on.**
- **DIP switch settings take priority in the setting of twin and triple addresses.**
- **If address setting using the DIP switches is carried out after automatic address setting has been carried out, use DIP switch No.3 on the outdoor unit to carry out automatic address resetting.**
- **If you would like to designate a particular indoor unit as the master unit because no master unit has been set, use the DIP switches on the slave units to make the setting.**

If automatic address setting is carried out once and then the slave unit addresses are set, the addresses will then be stored inside the EEPROM. Thus it is not necessary to repeat automatic address setting if the power is turned off and back on again.

DIP switch settings for twin slave unit addresses
Procedure:Turn off the power supply, and then set DIP switch 1-8 to ON. / The unit will become slave unit 1. / Turn on the power supply. /
Operation: The unit will operate as slave unit 1. Automatic address setting is not carried out at this time.

If the setting can be made while the power is still turned on, it is easier to mis-combine the setting with group settings. So, the setting be made better while the power is turned off.

- Only slave unit addresses can be set in this way. Master unit setting is not possible.
- If you make the DIP switch settings after the power has been turned back on, carry out twin/triple automatic address resetting.
- Be sure to set DIP switch 1-8 to ON when setting twin/triple addresses. If DIP switch 1-1 is set to ON without setting 1-8 to ON also, group addresses will be set instead, and the remote control open circuit error code (F26) will be displayed.

/ / Automatic address resetting for twin systems

Function

- This clears the current twin addresses which have been set automatically, and causes automatic twin address setting to be carried out once more.

Procedure: Press the ADDRESS RESET switch SW3 (push button switch) on the outdoor unit circuit board continuously / until LEDs 2 to 8 on the outdoor unit circuit board are all illuminated (takes approx. 3.5 seconds).

Operation: The outdoor unit will reset the addresses for the indoor units which it is connected to, and will send an instruction / to carry out automatic address setting again. If the indoor unit DIP switches have not been manually set for / twin address setting, the indoor units receive this command and they then clear their existing settings and carry / out automatic address setting.

If an indoor unit has had its address set by the DIP switch (DIP switch 1-8 is ON), or if the remote control unit is connected to one of the indoor units, then the addresses for those indoor units cannot be reset.

- The indoor units will not run for approximately 1 minute while automatic twin address resetting is being carried out.
- Do not turn off the power supply for at least 1 minute after automatic twin address resetting has been carried out.

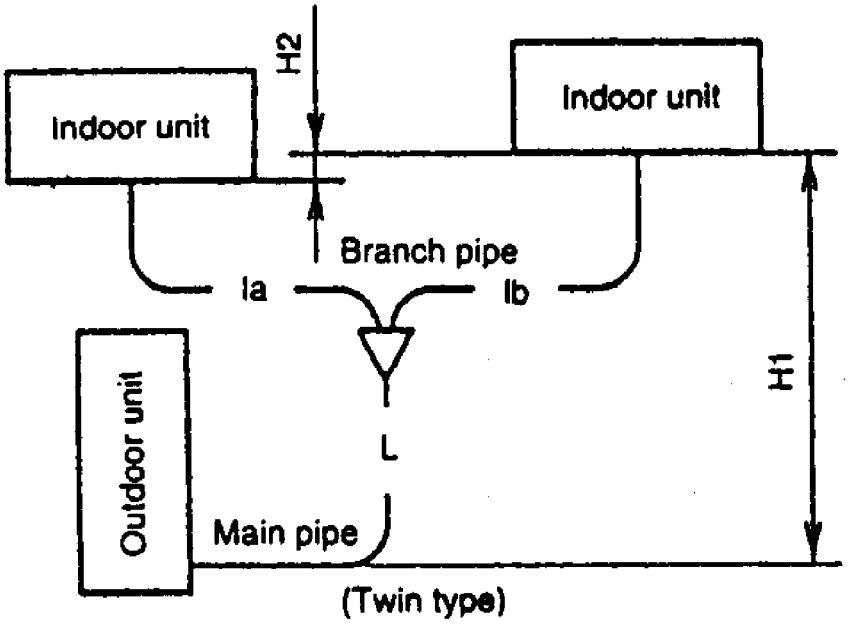
19.2. Piping connections

- The following table shows the pipe diameters for a twin-type system. /

Outdoor unit main pipe diameter (mm)				Indoor unit combinations	
43BB Liquid side: ϕ 9.52 Gas side: ϕ 19.05		Indoor unit capacity		24BD3	24BD3
		Branch pipe diameter	Liquid side	ϕ 6.35	ϕ 6.35
			Gas side	ϕ 15.88	ϕ 15.88
50BB Liquid side: ϕ 9.52 Gas side: ϕ 19.05		Indoor unit capacity		28BD3	28BD3
		Branch pipe diameter	Liquid side	ϕ 9.52	ϕ 9.52
			Gas side	ϕ 15.88	ϕ 15.88

- The following table shows the equivalent pipe lengths and height differences for twin-and triple-type systems

Equivalent length	L + la + lb				Within 50 m
Branch pipe diameter	la, lb				Within 15 m
Branch pipe difference	la - lb				Within 10 m
Height difference	H1	Within 30 m	Height difference between indoor units	H2	Within 1 m

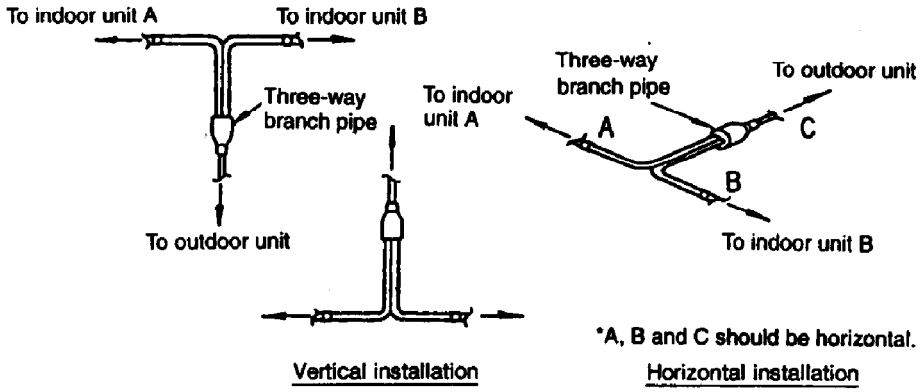


※The branch pipe should be horizontal to or perpendicular to the indoor unit.

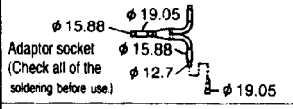
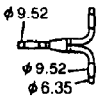
NOTE :

1. Use the main pipe to gain any rise or fall / required for the pipes.
2. The number of bends should be 8 or less in a single system (L + la, L + lb, L + lc), and 15 or less overall.
3. Branch pipes should be positioned horizontally.

- The branch pipe should be horizontal to or perpendicular to the / indoor unit.



■ Installing branch pipes

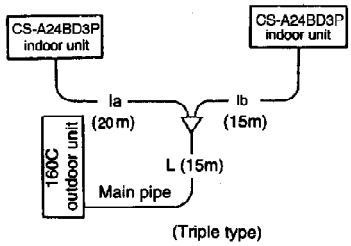
	Outdoor unit side (outer diameter)		Branch pipe (inner diameter)	Indoor unit side (outer diameter)	
Gas side	ϕ 15.88	———		ϕ 12.7	———
	ϕ 19.05	Cut		ϕ 15.88	Cut
				ϕ 19.05	Adaptor socket
Liquid side	ϕ 9.52	———		ϕ 6.35	———
				ϕ 9.52	Cut

19.3. Refrigerant charging

- For twin- and triple-type systems / The pipe length is the total of the branch pipe (L) and the junction pipes (la → t lb → t lc in order from the thickest diameter)). At the / point where the pipe length exceeds 30 m, determine the amount of refrigerant for the remaining liquid-side pipe diameters and / pipe lengths from the following table in order to charge the system.

Liquid-side pipe diameter	ϕ6.35	ϕ9.52
Additional charging amount (kg/m)	0.02	0.05

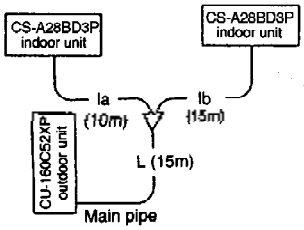
Example 1: For 50BB outdoor unit with an equivalent pipe length of 50 m



(Triple type)

		Liquid pipe diameter	Equivalent length	Additional charging amount for each pipe(kg)
Main pipe (L)		9.52	15m	Not needed if within 30m
Main pipe	(la)	6.35	20m	If exceeds 30 m, 5m×0.02=0.1
	(lb)	6.35	15m	If exceeds 30 m, 15m×0.02=0.3
———			50m	Total 0.4 kg

Example 2: For 50BB outdoor unit with an equivalent pipe length of 40 m



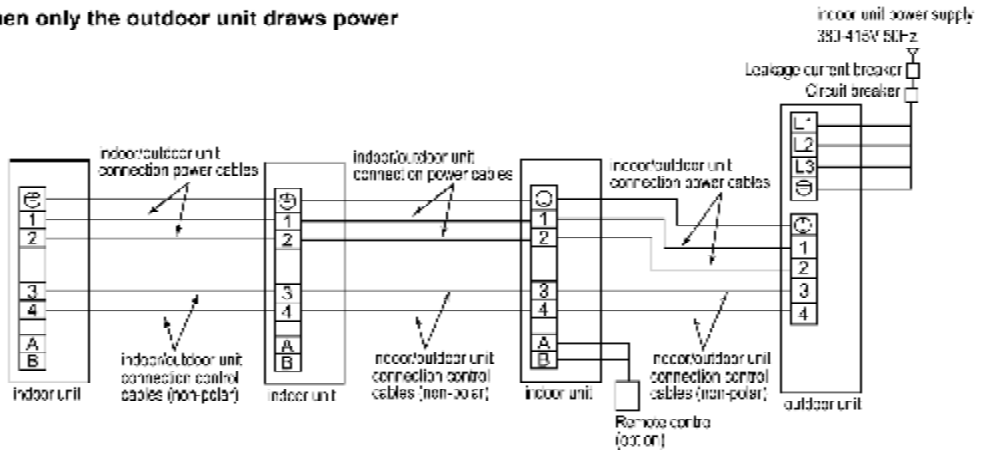
(Twin type)

		Liquid pipe diameter	Equivalent length	Additional charging amount for each pipe(kg)
Main pipe (L)		9.52	15m	Not needed if within 30m
Main pipe	(la)	9.52	10m	Not needed if within 30m
	(lb)	9.52	15m	If exceeds 30 m, 15m×0.02=0.3
———			40m	Total 0.5 kg

19.4. Wiring

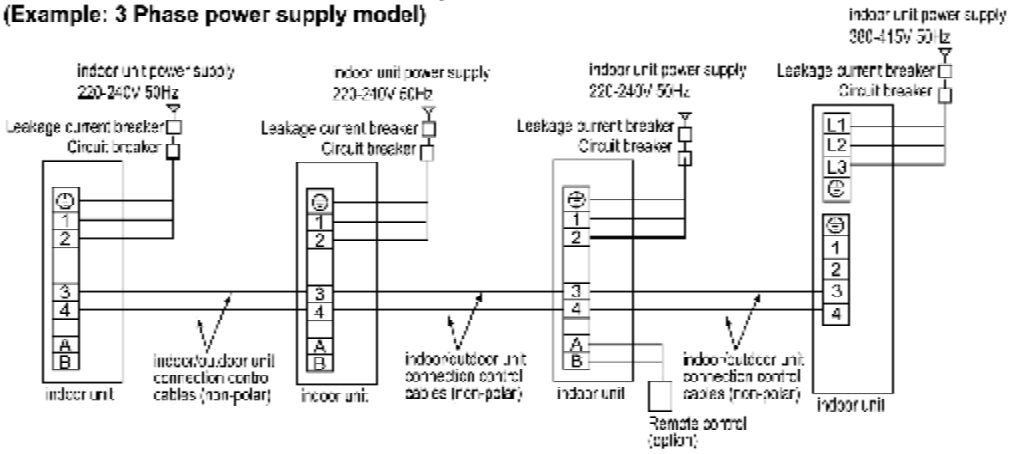
Connection 1:

When only the outdoor unit draws power



Connection 2:

When both indoor and outdoor unit draw power
(Example: 3 Phase power supply model)

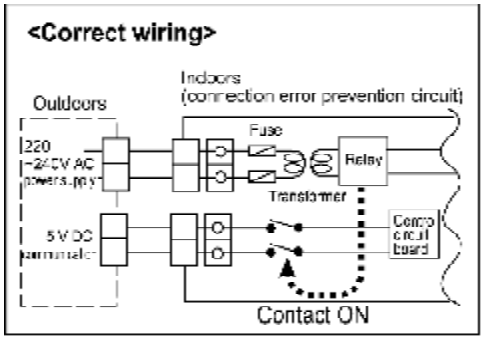


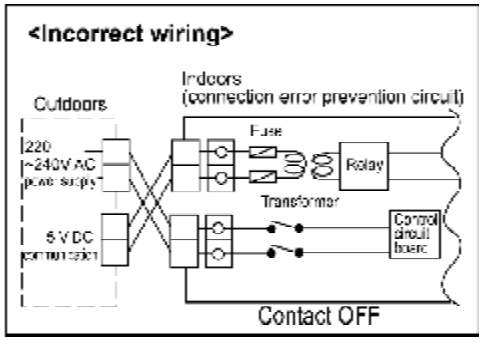
Important:

* For the above connection, if outdoor terminal 1 and terminal 2 are joined to indoor terminal 3 and terminal 4 by mistake upon operation, the control circuit board will be defected. (Wiring mistake prevention is not applicable for this connection).

20. WIRING MISTAKE PREVENTION

Improved quality of installation work through adoption of an "Connection error prevention" circuit which prevents wiring mistakes



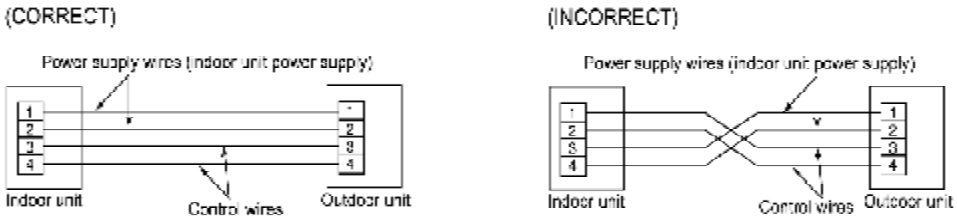


Connection errors with the control wires and the power supply wires will not only contribute to burning-out of the control circuit board, but can also cause large-scale working losses and affect reliability. If a circuit board with a "Connection error prevention" circuit is used, the relay

will not operate if the wires have been connected incorrectly, so that current will not flow to the control circuit board. This is designed principally to eliminate human error at the installation site.

Prevention of connection errors

These units are equipped with connection error prevention circuits. If the units do not operate, it is possible that the connection error prevention circuits have operated. In such cases, check that the power supply wires (connected to terminals [1] and [2] and the control wires (connected to terminals [3] and [4]) are connected correctly. If they are connected incorrectly, connnect them correctly. Normal operation should then commence.



- Do not short the remote control wires to each other. (The protection circuit will be activated and the units will not operate.) Once the cause of the short is eliminated, normal operation will then be possible.

NOTE:

- Wait one minute after turning on the indoor unit power supply before operating the remote control.

- If nothing at all appears in the remote control LCD, check the power supply for the indoor unit. / Refer to “TROUBLE SHOOTING”.

NOTE:

Never do any of the following, as doing so may damage the printed circuit board.

- Do not connect anything except a relay to the timer input or fan speed output (connector CNT1 on printed circuit board).

- Do not connect U-NET transmission wires to terminals 3 and 4 of the indoor and outdoor units. (*1)

- Do not connect U-NET transmission wires to terminals A and B of the remote control. / (*1) U-NET transmission wires are the communication wires used for the central controller.

21. TEST OPERATION AND SELF DIAGNOSIS

21.1. Test operation

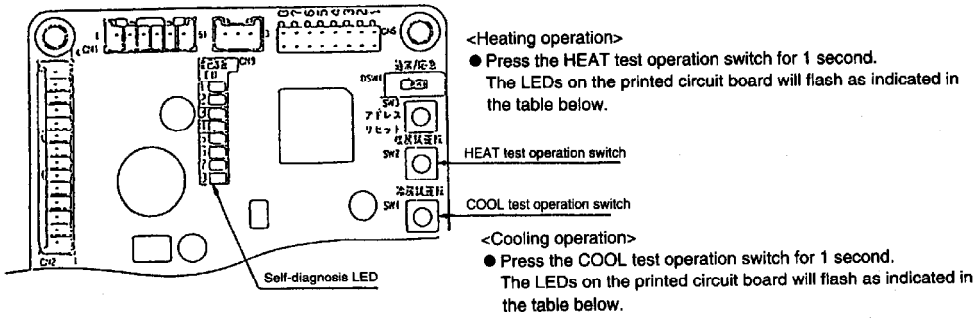
- Always be sure to use a properly-insulated tool to operate the switch on the circuit board. (Do not use your finger or a metallic

object).

- **Never turn on the power supply until all installation work has been completed.**
- **Turn on the circuit breaker before test operation extends past 6 hours. / (The crankcase heater will become energized, which will warm the compressor and prevent liquid compression.)**
- **For three-phase models, check that the phase is not reversed. / (If the phase is reversed, the LED on the printed circuit board will flash.)**
- **Check that the voltage is 198 V or higher when starting the unit. (The unit will not operate if the voltage is less than 198V.)**
- **Carry out test operation for 5 minutes or more using the remote control or the switch on the outdoor unit printed circuit board.**
- **Always carry out cooling first during test operation, even during the warm season. / (If heating is carried out first, problems with operation of the compressor will result.)**

21.2. Test operation from the outdoor unit

(Outdoor unit printed circuit board)



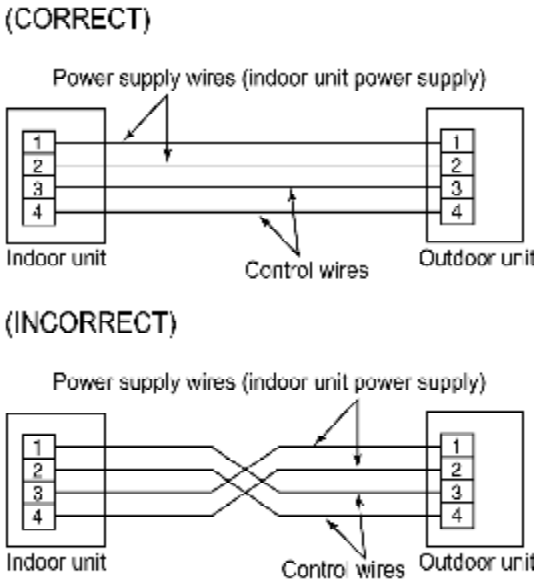
During outdoor unit emergency operation or test operation, the LEDs on the printed circuit board will flash.

	LEDs on outdoor unit printed circuit board						
	LED2	LED3	LED4	LED5	LED6	LED7	LED8
Emergency operation display							
Cooling test operation from outdoor unit							
Heating test operation from outdoor unit							

To cancel test operation, press the TEST or RUN button once more while test operation is being carried out. / (Test operation will stop automatically after 30 minutes have passed.)
NOTE:

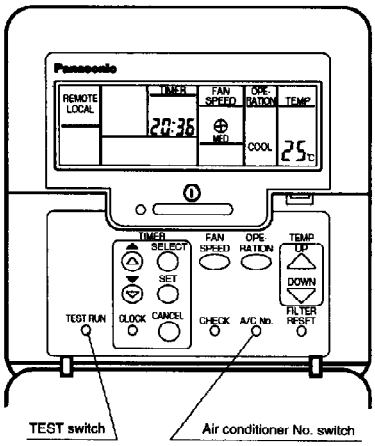
1. **These units are equipped with connection error prevention circuits. If the units do not operate, it is possible that the**

connection error prevention circuits have operated. In such cases, check that the drive wires (connected to terminals [1] and [2]) and the control wires (connected to terminals [3] and [4]) are connected correctly. If they are connected incorrectly, connect them correctly. Normal operation should then commence.



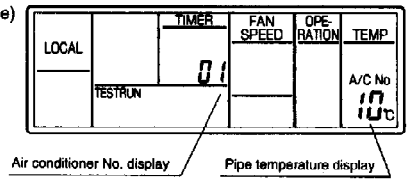
2. Do not short the remote control unit wires to each other. (The protection circuit will be activated and the units will not operate.) / Once the cause of the short is eliminated, normal operation will then be possible.

21.3. Test operation using the wired remote control



1. Check that "COOL" is displayed on the operation mode display, and then press the RUN switch to start test operation.
2. Within 1 minute of pressing the RUN switch, press the TEST RUN switch.
3. The pipe temperature (gas pipe) will then be displayed in the temperature setting display of the remote control.

(Example)

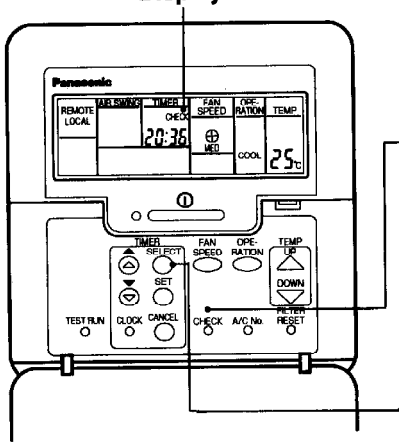


● During group control, the number appearing in the timer display will change each time the air conditioner No. switch is pressed, and the pipe temperature for the indoor unit corresponding to the number displayed will appear in the temperature setting display.

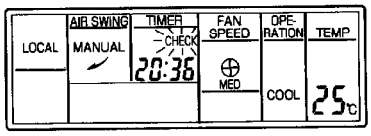
4. Check that the temperature in the pipe temperature display starts dropping after operation has been continuing for some time.
(The temperature will increase during heating operation.)

● The wired remote control display and the self-diagnosis LEDs (red) on the outdoor unit printed circuit board indicate where the abnormality has occurred.
● Recalling the error display

Display



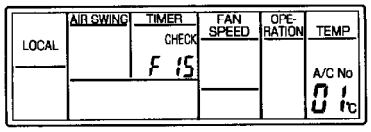
(Example)



When an abnormality occurs at this unit, "CHECK" flashes in the display.

Press the CHECK switch while the display is flashing.

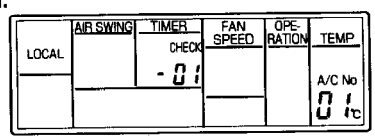
(Example)



The timer display will change and an error code from F15 to F49 will appear in place of the time. (The temperature setting display will also change to show the air conditioner No.)

Press the TIMER ON/OFF switch while the error is displayed.

(Example)



The F15 - F49 display will change to the detail display.

<Air conditioner No.>
● The air conditioner No. "01" appears during normal installation and use. When using group control, a different number may appear. The air conditioner No. can be displayed by pressing the air conditioner No. switch.

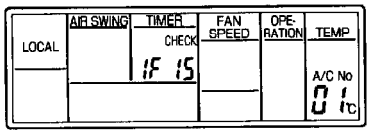
● After checking the error display and the detail display, refer to the self-diagnosis error code table on the following page and check the location of the problem.
● If the problem is repaired and operation returns to normal, the CHECK display on the remote control will put out, but the self-diagnosis LED will remain illuminated until operation starts again.

How to display the past error message

If the "CHECK" display on the wired remote control is not flashing, press the CHECK button continuously for 5 seconds or more to display the problem details for the last problem or the problem before that. You can then switch between the displays for the previous problem and the problem before that by pressing the TIMER, FORWARD or BACK buttons.
(Last problem display: 1F15 - 1F49
Second-last problem display: 2F15 - 2F49)

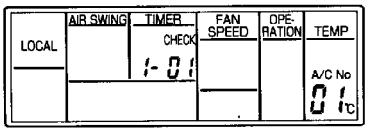
Press the CHECK button once more to return to the normal display.

(Example of last problem display)



An error code from 1F15 to 1F49 will be displayed.
(The temperature setting display will also change to show the air conditioner No.)

(Example)



If the TIMER ON/OFF switch is pressed while the error code from 1F15 to 1F49 is being displayed, the display screen will change to show the details of the last problem display.
(If 2F15 to 2F49 is being displayed, the details of the second-last problem display will appear.)

■ Self-diagnosis error code table

☼: Flashing ○: Illuminated Blank: Off

Remote control display		Printed circuit board self-diagnosis LED (red)								Error display
Wired		Indoor unit	Outdoor unit							(Check location)
Error display	Detail display	LED2	LED2	LED3	LED4	LED5	LED6	LED7	LED8	
F17	–01	☼	☼	☼			☼	(※2)	(※2)	Option problem Option connection terminals
F20	–01	☼	☼			☼		(※2)	(※2)	Indoor temperature thermistor problem Indoor temperature thermistor lead wire or indoor unit connector CN1
	–02	☼	☼		☼	☼		(※2)	(※2)	Remote control thermistor problem Remote control thermistor
F21	–01	☼		☼		☼		(※2)	(※2)	Pipe temperature thermistor problem (indoor unit side) Pipe temperature thermistor lead wire or indoor unit connector CN1
F25	–01	☼			☼			(※2)	(※2)	Centralised control address overlap problem Check settings for optional centralised control circuit board address switch
F26	–01	☼		☼				(※2)	(※2)	Remote control transmission wire open circuit problem Remote control unit cable and connection terminals
	–02	☼	☼					(※2)	(※2)	Remote control transmission problem Check the transmission wave pattern
F27	–01	☼		☼				☼		Indoor/outdoor unit transmission wire open circuit problem Indoor/outdoor unit connection cable and connection terminals, or indoor unit and outdoor unit power supplies
	–02	☼	☼					☼		Indoor/outdoor unit transmission problem Check the transmission wave pattern.
F29	–01	☼		☼		☼	☼	(※2)	(※2)	Indoor unit setting problem Abnormal setting of the indoor p.c. board.
	–02	☼	☼			☼	☼	(※2)	(※2)	Indoor unit setting problem Abnormal setting of the indoor p.c.board.
	–12	☼	☼		☼	☼	☼	(※2)	(※2)	Remote control unit setting problem Abnormal setting of the remote control.
F30	–02	☼	☼		☼		☼	☼		Negative or open phase power supply Check the main power supply terminal board connections, and switch the main power supply phase.
	–06	☼		☼	☼		☼	☼		Poor power supply connection, or distorted voltage wave pattern Check the main power supply terminal board connections, and check the power supply wave pattern.
	–07	☼	☼	☼	☼		☼	☼		Poor power supply connection Check the main power supply terminal board connections.
F31	–02	☼		☼			☼	☼		High-pressure cut-off Refrigeration system, Obstructing of the heat radiation from outdoor unit
F33	–01	☼	☼				☼	☼		Compressor overcurrent protection Open phase or lock in compressor, or blown main power supply fuse
	–02	☼	☼	☼			☼	☼		Compressor discharge temperature protection Insufficient gas
F40	–41	☼	☼			☼		☼		Compressor discharge temperature thermistor problem Discharge temperature thermistor lead wire, outdoor unit connector CN2, or relay connector
	–61	☼		☼		☼		☼		Heat exchanger outlet temperature thermistor problem (Outdoor unit) Heat exchanger outlet temperature thermistor lead wire, outdoor unit connector CN2, or relay connector
F41	–02	☼	☼		☼	☼		☼		High-pressure switch open circuit problem High-pressure switch lead wire, outdoor unit connector CN2, or relay connector
	–03	☼		☼	☼	☼		☼		Heating pressure switch open circuit problem Heating pressure switch lead wire, outdoor unit connector CN2, or relay connector
F42	–01	☼	☼	☼		☼		☼		Current detector open circuit or compressor current problem Outdoor unit connector CN2, compressor internal protection system activated, or blown main power supply fuse
F49	–01	☼		☼		☼	☼	☼		Outdoor unit setting problem Abnormal setting of the outdoor p.c.board
	–02	☼	☼			☼	☼	☼		Outdoor unit setting problem Abnormal setting of the outdoor p.c.board

If more than one error occurs between the indoor and outdoor units, the problem display on the remote control may not match the LED display on the outdoor unit printed circuit board. In such cases, check both locations and remove the causes of the problems.

(※2)

LED7	LED8	Unit display for twin/triple system
		Master unit error
○		Slave unit 1 error
	○	Slave unit 2 error

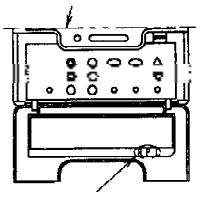
● The LED1 (green) illuminates to indicate that the microprocessor on the microprocessor circuit board is operating normally. If the LED is switched off or is flashing irregularly, check the power supply, and turn it off and then back on again.

22. SETTING OF SAVE ENERGY AND THERMISTOR SWITCH

22.1. Energy save setting

Open the cover remote control unit and confirm the presence of the [RP1] marking. / Energy save setting method should be different for with [RP1] marking and without [RP1] marking.

Remote control unit



There is 「RP1」marking.

・Upper and lower limits can be set for the setting temperature during cooling and heating operation (Energy save setting)

(1) While operation is stopped , press the UP and DOWN switches simultaneously.

(2) "0" (zero) will flash in the clock display at this time , so press the RESERVE switch.

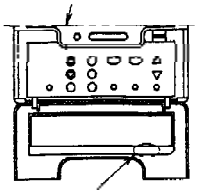
(3) To set an upper limit (Setting a temperature above the energy save temperature will not be possible.)
Press the OPERATION MODE switch unit HEAT is displayed.
Press the UP or DOWN switch to set the temperature.
Press the RESERVE switch.
Example: If the heating display is set to 28℃ , setting the temperature to higher than 28℃ will not be possible.

(4) To set a lower limit (Setting a temperature below the energy save temperature will not be possible.)
Press the OPERATION MODE switch unit COOL is displayed.
Press the UP or DOWN switch to set the temperature.
Press the RESERVE switch.
Example: If the cooling display is set to 22℃ , setting the temperature to lower than 22℃ will not be possible.

(5) If the CLEAR switch is pressed during steps (3) or (4) above , the energy save setting will be cleared.

★Press the RESERVE switch or the CLEAR switch to return to normal operation mode after making an energy save setting in steps (3) to (5).

Remote control unit



There is not 「RP1」marking.

・Upper and lower limits can be set for the setting temperature during cooling and heating operation (Energy save setting)

(1) While operation is stopped , press the UP and DOWN switches simultaneously.

(2) To set an upper limit (Setting a temperature above the energy save temperature will not be possible.)
Press the OPERATION MODE switch unit HEAT is displayed.
Press the UP or DOWN switch to set the temperature.
Press the RESERVE switch.
Example: If the heating display is set to 28℃ , setting the temperature to higher than 28℃ will not be possible.

(3) To set a lower limit (Setting a temperature below the energy save temperature will not be possible.)
Press the OPERATION MODE switch unit COOL is displayed.
Press the UP or DOWN switch to set the temperature.
Press the RESERVE switch.
Example: If the cooling display is set to 22℃ , setting the temperature to lower than 22℃ will not be possible.

(4) If the CLEAR switch is pressed during steps (2) or (3) above , the energy save setting will be cleared.

★Press the RESERVE switch or the CLEAR switch to return to normal operation mode after making an energy save setting in steps (2) to (4).

23. GROUP CONTROL

1 Setting group for 1 remote control unit

- When using a remote control thermostat, the thermostat setting is used for all indoor units in the group.

- During group control, up to a maximum of 16 indoor units can be connected. (Do not mix heat pump units and cooling only units.)

- Do not mix manual settings and automatic settings. (Manual settings take priority.)

- The master unit and slave units can all be centrally controlled during group control. /

Automatic setting for group control

- If the power supplies for indoor units which are connected are turned on simultaneously, the indoor unit numbers will be determined automatically after approximately 1 minute. (DIP switch settings are not necessary.) /

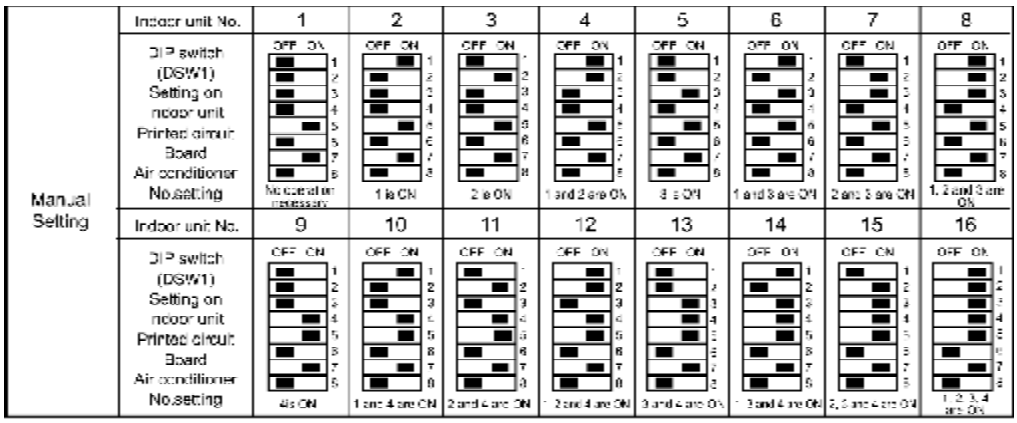
NOTE:

- Correct wiring connections are basic requirements for automatic setting. If the wires are connected incorrectly when the power is turned on, the settings will not be made correctly and operation will not be possible.

- When address numbers are set automatically, you will not know which address number corresponds to which indoor unit.

- Do not turn off the power supply for at least 1 minute during automatic address setting, otherwise the settings will not be made correctly.

(Manua setting for group control)



Automatic address resetting for group control

After setting DIP switches 1 to 4 to OFF and stop operation. Then press the "AIR SWING AUTO", "OPERATION MODE" and "Air conditioner No." switches simultaneously. Then addresses will be momentarily reset, and then automatic address setting will be carried out once more. /

Switching the thermistor

- The temperature detection thermistor used for detecting the air temperature and changing between COOL and HEAT operation can be switched between the thermistor at the indoor unit and the thermistor at the remote control unit box. However, do not switch to the remote control unit thermistor if using two remote control units.

1. While operation is stopped, press and hold the STOP/RUN switch, and then press the UP and DOWN / switches together.

2. "DO" or "01" will appear in the time display.

3. Press the FORWARD or BACK timer switches to switch the display between "00" and "01 ". "00" ... Indoor unit setting (factory

default) "01" ... Remote control unit setting

4. Press the RESERVE switch. (Be sure to press the RESERVE switch so that normal operation mode can be resumed.)

- Repeat the procedure in steps (1) to (4) to change the setting again.

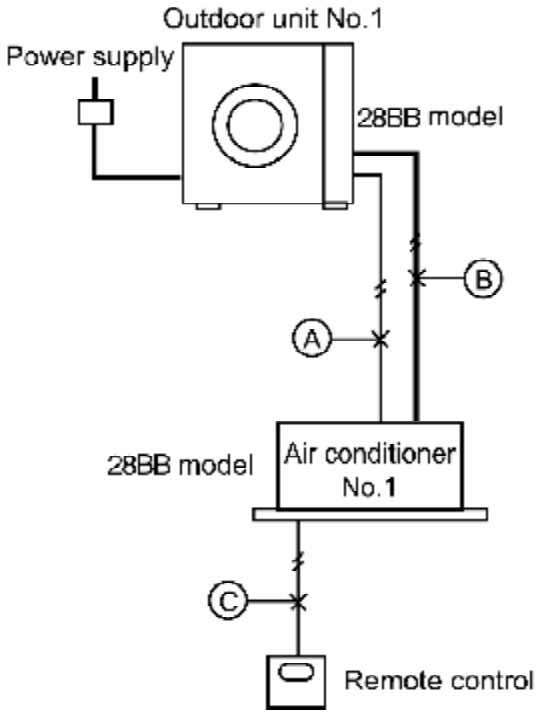
24. TROUBLE SHOOTING

If test operation does not proceed correctly

Carry out test operation after approximately 6 hours have passed since the power was turned on (crankcase heater is energized). If operation is started by using the remote control within 1 minute of turning on the power, the outdoor unit settings will not be made correctly and correct operation will not be possible.

If the following symptoms occur after turning on the power, check the wiring connections once more. /

- For standard installation / (System example)



1. The main power is turned on while the indoor-outdoor transmission wires are not connected (open circuit at section A) / Symptom: / Remote control unit . . . "CHECK" flashes / NOTE: /

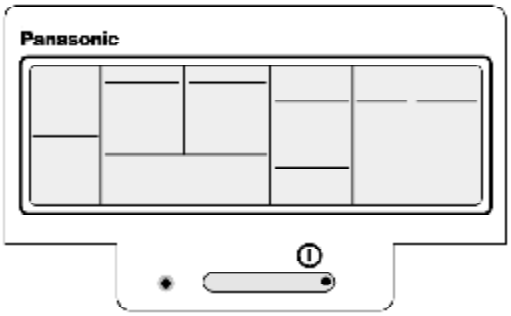
Indoor unit . . . LED2 on printed circuit board flashes / Outdoor unit . . . LED3 and LED7 on printed circuit board flash /

2. **The main power is turned on while the indoor-outdoor power supply wires are not connected (open circuit at section B) / Symptom: / Remote control unit . . . Display of “No power supply” / NOTE: / Indoor unit . . . No display / Outdoor unit . . . LED3 and LED7 on printed circuit board flash /**
3. **The main power is turned on while the remote control unit connection cord is not connected (open circuit at section C) / Symptom: / Remote control unit . . . Display of “No power supply” / NOTE: / Indoor unit . . . LED1 on printed circuit board stays illuminated / Outdoor unit . . . LED1 on printed circuit board stays illuminated**

/ (When remote control display shows “Power supply”)

```
NOTATION PUBLIC "-//ALDUS//NOTATION TAGGED IMAGE FILE FORMAT//EN"
ENTITY SYSTEM "TS_ inst2.tif"
```

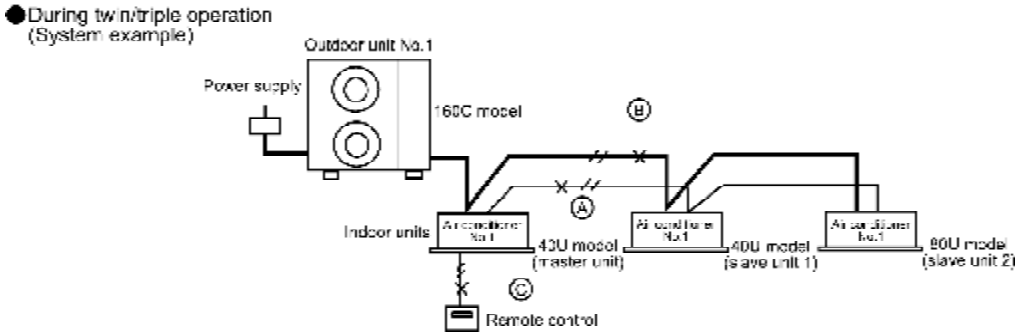
(When remote control display shows “No power supply”)



Remedy

1. **Turn off the main power. /**
2. **Connect the disconnected wire correctly. /**
3. **Turn the main power back on. /**
4. **After 1 minute, start operation using the remote control. / (Indoor unit . . . Operation will start according to the remote control setting.) / (Outdoor unit . . . Operation will start after 3-5 minutes.)**

NOTE: / / The “CHECK” display on the remote control and the flashing of LEDs on the printed circuit boards will not occur immediately. They will appear 3-6 minutes after the main power is turned on. /



1. The main power is turned on while the transmission wires between the indoor unit(s) are not connected (open circuit at section A) / Symptom: / Nothing abnormal appears on the remote control display. If operation is then started in this condition, the combination of the 160C outdoor unit and the 40U indoor unit (master unit) will cause abnormal operation to occur. / ↓ / If operation continues, an abnormality will occur on the refrigeration cycle and operation will stop.

- **Remote control . . . "CHECK" flashes**
- **Indoor unit (master) . . . The LEDs on the printed circuit board flash and operation stops**
- **Indoor unit (slave) . . . LED1 on the printed circuit board illuminates and the unit does not operate at all**
- **Outdoor unit . . . The LEDs on the printed circuit board flash and operation stops /**

2. The main power is turned on while the power supply wires between the indoor unit(s) are not connected (open circuit at section B) / Symptom: / Same as above. If operation continues, an abnormality will occur on the refrigeration cycle and operation will stop. / ↓

- **Remote control . . . "CHECK" flashes**
- **Indoor unit (master) . . . The LEDs on the printed circuit board flash**
- **Indoor unit (slave) . . . The LEDs on the printed circuit board do not illuminate and the unit does not operate at all**
- **Outdoor unit . . . The LEDs on the printed circuit board flash and operation stops /**

3. The main power is turned on while the remote control connection

cord is not connected (open circuit at section C) / Symptom:

- **Remote control unit . . . Display of “No power supply”**
- **Indoor unit (master) . . . LED1 on the printed circuit board stays illuminated and the unit does not operate**
- **Indoor unit (slave) . . . LED1 on the printed circuit board stays illuminated and the unit does not operate**
- **Outdoor unit . . . LED1 on the printed circuit board stays illuminated and the unit does not operate**

/ Remedy

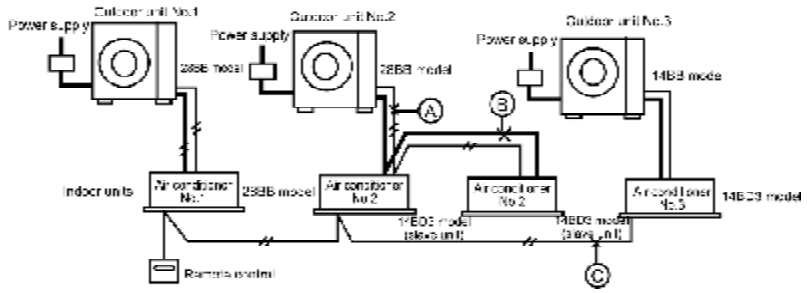
1. **Turn off the main power. /**
2. **Connect the disconnected wires correctly. /**
3. **Turn the main power back on. /**
4. **After 1 minute, start operation using the remote control. / (Indoor units . . . Operation will start according to the remote control setting.) / (Outdoor unit . . . Operation will start after 3-5 minutes.)**

/ If slave units do not operate even after the wiring has been corrected (automatic addressing is not possible)

1. **Check that DIP switches 1 to 4 and DIP switch 8 are all set to OFF, and then stop operation. /**
2. **Press the ADDRESS RESET button (SW3) at the outdoor unit for approximately 4 seconds / (The self-diagnosis LEDS 2 to 8 will illuminate in order, and the system is reset once they are all illuminated.)**

/ The above procedure cannot be used to carry out automatic address resetting during group control. /

● During group control operation
(System example)



1. **The main power is turned on while the transmission wires between the indoor unit and the outdoor unit are not connected (open circuit at section A) / Symptom: / Operation of indoor unit**

No. 1 and indoor unit No. 3 is possible. / However, “CHECK” flashes in the remote control unit display for 3-5 minutes after the main power is turned on.

- **Remote control . . . “CHECK” flashes**
- **Indoor unit No. 2 . . . LED2 on the printed circuit board flashes (both master and slave units)**
- **Outdoor unit No. 2 . . . LED3 and LED7 on the printed circuit board flash /**

2. **The main power is turned on while the power supply wires between the indoor units are not connected (open circuit at section B) / Symptom: / Operation of indoor unit No. 1 and indoor unit No. 3 is possible / However, if operation is then started in this condition, the combination of the 28BB outdoor unit and the 14BB indoor unit (master unit) will cause abnormal operation of indoor unit No. 2 to occur / ↓ / If operation continues, an abnormality will occur on the refrigeration cycle and operation will stop**

   - **Remote control . . . “CHECK” flashes (indoor unit No. 2 abnormality)**
   - **Indoor unit No. 2 . . . LED2 on the printed circuit board flashes (both master and slave units)**
   - **Outdoor unit No. 2 . . . The LEDs on the printed circuit board flash /**

3. **The main power is turned on while the remote control connection cord is not connected (open circuit at section C) / Symptom: / Nothing abnormal appears on the remote control display, and operation of indoor unit. No. 1 and indoor unit No. 2 is possible. / However, indoor unit No. 3 cannot be operated. /**

Remedy

1. **Turn off the main power. / ↓**
2. **Connect the disconnected wires correctly. / ↓**
3. **Turn the main power back on. / ↓**
4. **After 1 minute, start operation using the remote control. / (Indoor units . . . Operation will start according to the remote control setting.) / (Outdoor units . . . Operation will start after 3-5**

minutes.) /

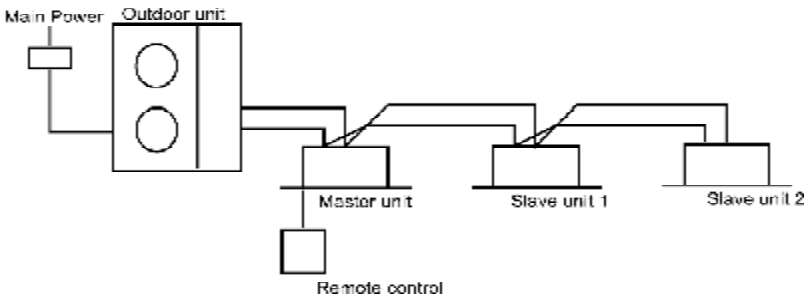
If slave units do not operate even after the wiring has been corrected (automatic addressing is not possible)

1. **Check that DIP switches 1 to 4 and DIP switch 8 are all set to OFF, and then stop operation. /**
2. **Press the “AIRSWING AUTO”, “OPERATION” and “A/C No.” buttons simultaneously. / The addresses will be momentarily reset, and then automatic address setting will be carried out once more.**

/ The above procedure cannot be used to carry out automatic address resetting of twin/triple control. / / (Note on automatic address setting) / The printed circuit boards automatically store the connected system configuration when power is supplied. As a result, once the power has been turned on for these printed circuit boards, the units can not be changed about within the system, even if the units are of the same model and have same capacity. /

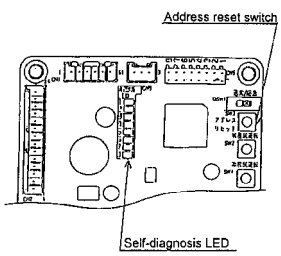
ADDRESS SETTING FOR TWIN/TRIPLE SYSTEM

(Example)



1. **Automatic address setting (no need to have dip-switch set) / If the wiring connected properly as above example, the address is set automatically by the main power supply. An indoor unit with remote control will be set as the master. If the power source is installed to indoor units and outdoor separately, turn on the switch as the following procedure: outdoor unit, indoor unit with control, and other indoor units. /**

When the slave units do not operate (when address cannot be set) /



Reset the address as the following procedure:

1. After making sure that dip-switch No. 1 to 4 and No. 8 are OFF, stop the operation.
2. Push address reset switch (SW3) on the outdoor unit PC board for 4 seconds. Self-diagnosis LED No. 2 to 8 will start blinking by order. And when all 7 pieces of LED (No. 2 ~ 8) are illuminated, address reset will be finished. Then the address for the slave unit will be reset.

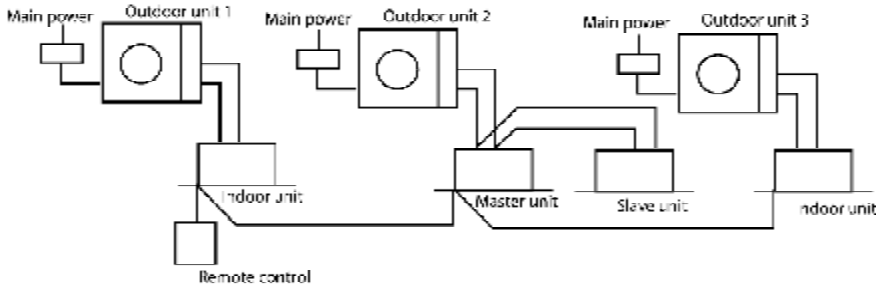
Important: The address for the group control cannot be reset, using the above mentioned procedure. /

2. Manual address setting (by dip-switch DSW1) / When you set the address manually, set the dip-switch of the PC board in the indoor unit as follow:

Master Unit	Slave unit (Slave No.1 of Triple)	Slave unit (Slave No.2 of Triple)
No need to set address for the RC of the master unit The address for the master unit will be set in the unit with RC	DSW1 ON OFF 1 2 3 4 5 6 7 8 No. 6 ON, the others no change	DSW1 ON OFF 1 2 3 4 5 6 7 8 No. 1 and 8 ON, the others no change

ADDRESS SETTING FOR GROUP CONTROL SYSTEM

(Example)



1. Automatic address setting (no need to have dip-switch set) / If the wiring connected properly as above example, the AC numbers are set automatically by the main power supply. An indoor unit with remote control will be set as the master. / If the power source is installed to indoor units and outdoor separately, turn on the switch as the following procedure: outdoor unit, indoor unit with controller, and other indoor units. The AC number will be set at random. / /

2. Manual address setting (by dip-switch DSW1) / When you set the address manually, set the dip-switch of the PC board in the indoor unit as follow:

Master Unit	Slave Unit	
	Slave No.1 of Triple	Slave No.2 of Triple
No need to set address for the RC of the master unit The address for the master unit will be set in the unit with RC	DSW1 No.8 ON, the others no change	DSW1 No.7 and 8 ON, the others no change

3. Manual address setting (by dip-switch DSW1) / When you set the address manually, set the dip-switch of the PC board in the indoor unit as follow:

Indoor unit No.	1	2	3	4	5	6	7	8
Dip-switch on the PCB of the Indoor unit (DSW1)								
	No Charge	No.1 ON	No.2 ON	No.1 2 ON	No.3 ON	No.1 3 ON	No.2, 3 ON	No.1, 2, 3 ON
Indoor unit No.	9	10	11	12	13	14	15	16
Dip-switch on the PCB of the Indoor unit (DSW1)								
	No. 4 ON	No.1, 4 ON	No.2, 4 ON	No.1,2, 4 ON	No.3, 4 ON	No.1, 3, 4 ON	No.2, 3, 4 ON	No.1, 2, 3, 4 ON

Procedures of deleting memory at twin/triple control system

1. Set the “OFF” position for main power supply switch.

2. Set the “ON” position for No. 8 pin of dip switch (DSW1) on indoor unit P.C. board.

3. Take main power supply switch “ON” for one minute, and then main power supply switch off.

4. Set the “OFF” position for No. 8 pin of dip switch (DSW1).

Procedure of deleting memory at group control system

1. Set the “OFF” position for main power supply switch.

2. Set the “ON” position for No. 1 pin to No. 4 pin of dip switch (DSW1) on indoor unit P.C. board. / (No. 8 pin of dip switch (DSW1) should be “OFF” position)

3. Take main power supply switch “ON” for one minute, and then

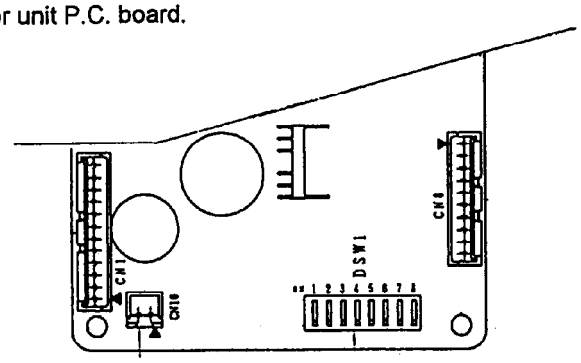
main power supply switch off.

4. Set the “OFF” position for No. 1, No. 2, No. 3 and No. 4 pin of dip switch (DSW1).

(Important notice) / Above procedures are for deleting memory on indoor unit P.C. board. And it is not for Address reset.

24.1. Indoor unit P.C. board layout.

Below drawing has showing the location of dip switch 1(DSW1) on the indoor unit P.C. board.



Dip switch1(DSW1). [to use for manual setting]

25. EMERGENCY OPERATION

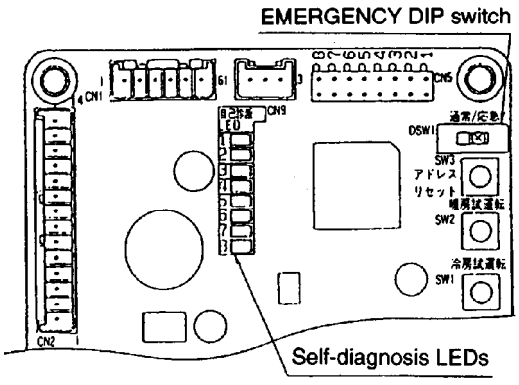
Emergency operation

- Emergency operation of outdoor unit / Emergency operation can be carried out by setting the DSW1 switch on the printed circuit board inside the outdoor unit to the EMERGENCY position. However, emergency operation is only carried out when an abnormality is detected by the indoor/outdoor temperature thermistors. / The resistance values of each thermistor are measured as shown in the table below to determine if there is an abnormality. / / Thermistor resistance table

Temperature	Resistance value (kΩ) ± 5%	
	Room temperature thermistor	Pipe temperature thermistor
-20°C	205.8	197.8
-10°C	114.6	111.9
-5°C	87.3	85.4
0°C	67.0	65.8
5°C	51.8	51.0
10°C	40.4	39.9
15°C	31.7	30.7
20°C	25.1	25.0
25°C	20.0	20.0
30°C	16.1	16.0
40°C	10.4	10.6
50°C	6.9	7.1
60°C	4.7	4.9
70°C	___	3.5
80°C	___	2.5
90°C	___	1.8
100°C	___	1.4

The pipe temperature thermistor resistance value are the same for the indoor and outdoor units.

<When a thermistor abnormality is judged to have occurred>



- Set only the thermistor which shows an abnormality to the condition shown in the table below to carry out emergency operation

	Thermistor	Cooling mode	Heating mode
Indoor unit	Room temperature	Fixed at 25°C	
	Room temperature	Shorted	Open

	Thermistor	Cooling mode	Heating mode
Outdoor unit	Discharge temperature	Open	Shorted
	Heat exchanger outlet temperature	Shorted	Open

- Refer to the circuit diagram for the connection locations for each thermistor.
- If there is an abnormality in the room temperature thermistor, the temperature will be fixed at 25°C regardless of the remote control unit display.

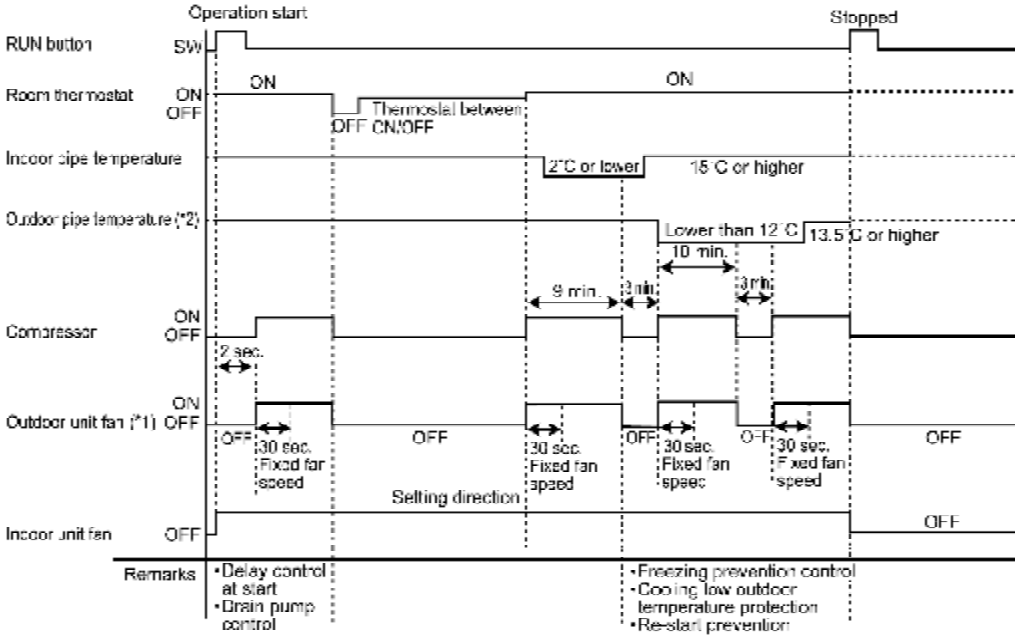
NOTE:

- Any abnormalities detected by the temperature thermistors are ignored during emergency operation, so that long-term operation in this mode should be avoided.
- After emergency mode operation has been completed and normal operation is to be resumed, turn the power supplies for the indoor and outdoor units off and return the DIP switch to the NORMAL position.
- Self-diagnosis LEDS 4 to 6 will flash during emergency operation.

26. CONTROL

26.1. Description of basic Functions

26.1.1. Cooling mode operation time chart



(*1) / Outdoor unit fan start control during cooling / At the start of cooling mode and drying mode operation, the outdoor unit heat exchanger outlet temperature is detected in order to set the fan speed. / Operation is carried out at the fan speed detected for 30 seconds.

Heat exchanger outlet temperature detected (T)	Outdoor unit fan start speed
T < 0°C	SUPER LOW
0°C ≦ T < 10°C	LOW
10°C ≦ T < 20°C	MEDIUM
20°C ≦ T < 25°C	HIGH
25°C ≦ T	SUPER HIGH

After 30 seconds, the heat exchanger outlet temperature is detected and the outdoor unit fan speed is changed automatically.

(*2) / Cooling low outdoor temperature protection / When the heat exchanger outlet temperature drops to less than 12°C for a continuous period of 10 minutes, the outdoor unit stops running. / This is cancelled after 3 minutes (re-start prevention)

- Remote control displays and indoor unit operation continue during this time.

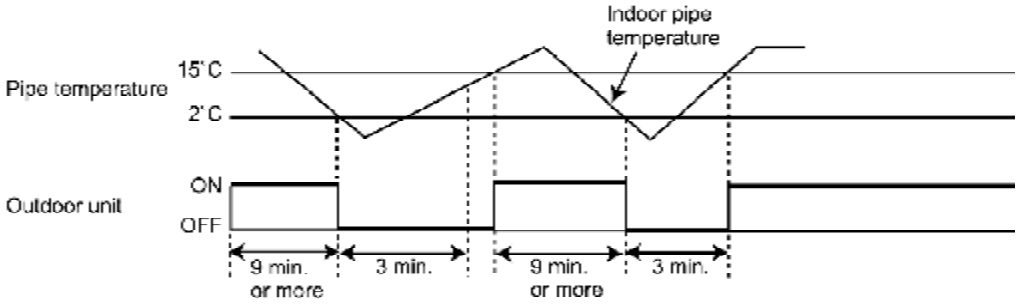
- The 10-minute countdown is cleared if the compressor stops or if the temperature at the outdoor unit outlet rises to 13.5°C or higher.

26.2. Freezing prevention control

1. Operation / During cooling mode operation, after 9 minutes have passed since the compressor turned on, the outdoor units stops operating when the temperature detected by the indoor unit pipe temperature sensor is 2°C or lower. / The indoor unit continues

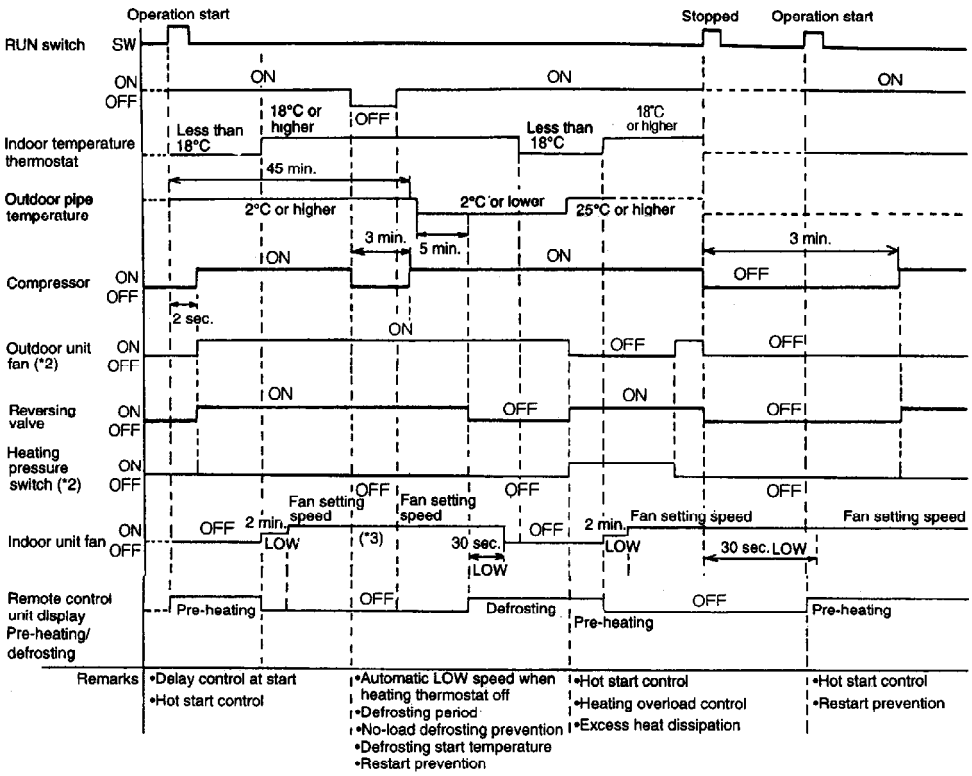
operating at the fan speed set by the remote control unit. (The remote control unit display does not change.)

2. **Cancelling / This control is cancelled when the temperature detected by the indoor unit pipe temperature sensor is 15°C or higher. / (If the outdoor unit stops even though the temperature is 15°C or higher, restart prevention control will activated and the outdoor unit will not start again for 3 minutes.) / (The 9-minute countdown is cleared while the compressor is stopped.)**



(The above illustration shows the operation when there are no conditions for turning the outdoor unit off other than freezing prevention.)

26.3. Heating mode operation time chart (Heat pump type only)



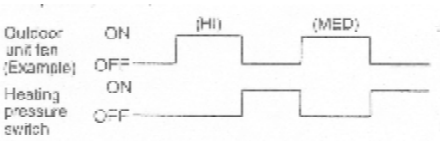
(*3) Refer to "6 Indoor unit fan control when thermostat is off during heating mode operation"

(*4) Refer to "9 Indoor thermostat characteristics

(*2) / Outdoor unit fan control during heating mode operation

Under conditions when the compressor is on during heating mode operation (except during defrosting and / when the liquid bypass valve is on), the outdoor unit fan is controlled by means of input (CN2) indicating / whether the contact of the heating pressure switch on the outdoor unit circuit board is open or closed / (At the start of heating mode operation, the fan operates at HI speed.)

Heating pressure switch contact	Outdoor unit fan operation
ON (open) - OFF (closed)	One step down from fan speed before stopping
ON (open)	Stopped



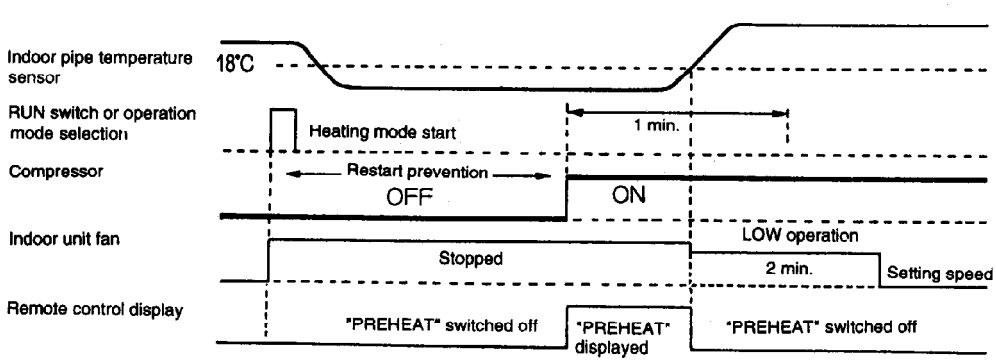
The heating pressure switch turns on at 2.35 MPa and off at 1.96 MPa.

26.4. Hot starting

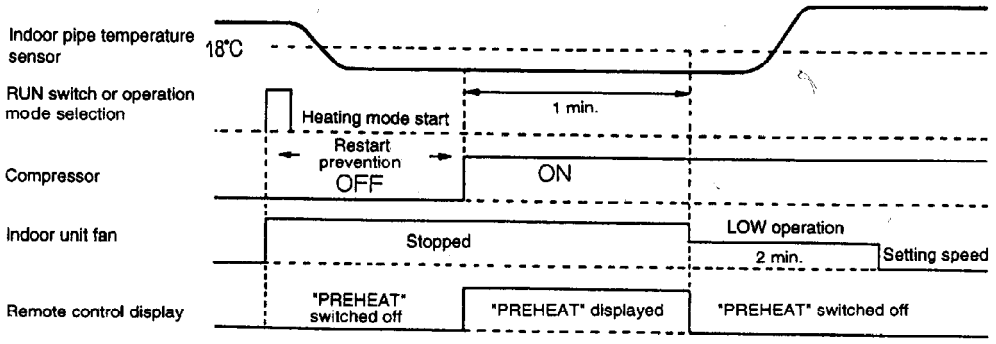
1. When heating mode operation starts

1. **Start / Hot start control commences heating mode operation starts.**
2. **Operation / “PREHEAT” appears on the remote control display. (Other displays remain unchanged.) / At the indoor unit, the indoor unit fan stops. In addition, during hot starting, the louvre stays at the horizontal / position (angle 0~).**

3. Cancelling / After 1 minute has passed since heating mode operation started, or if the compressor has turned on, hot / starting is cancelled when the temperature detected by the indoor unit pipe temperature sensor is 18~C / or higher. / After cancellation, the "PREHEAT" display on the remote control disappears and the louvre operation / returns to the previous setting. / (However, for 2 minutes after cancellation, the indoor unit fan operates at LOW speed, and then returns to / the previous setting.) / / <When hot start operation is cancelled by temperature>



<When hot start operation is cancelled by time>

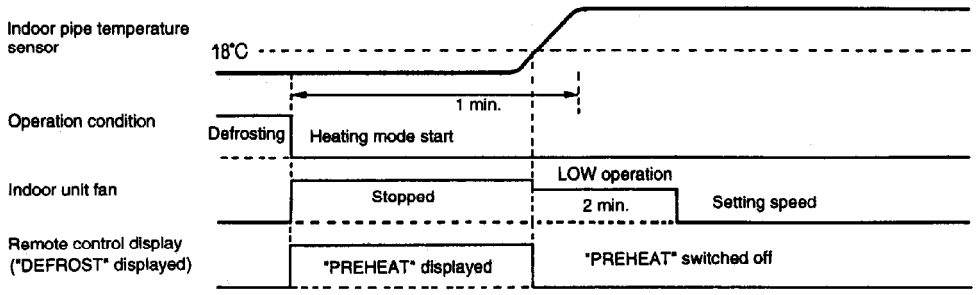


2. When defrosting is complete

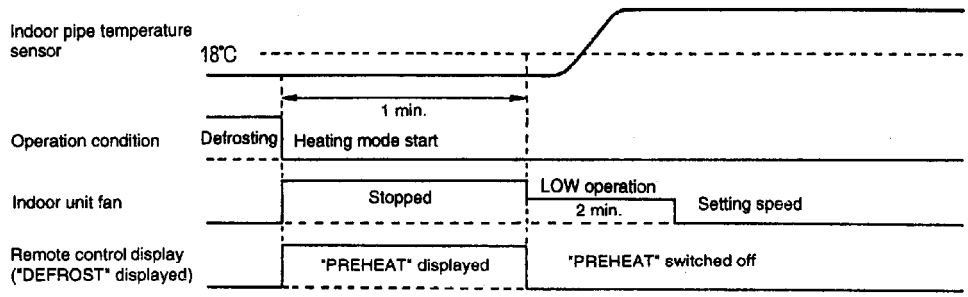
1. Start / Hot start control commences when defrosting is complete.

2. Operation / "PREHEAT" appears on the remote control display. (Other displays remain unchanged.) / At the indoor unit, the indoor unit fan stops. In addition, during hot starting, the louvre stays at the horizontal / position (angle 0~).

3. Cancelling / Hot starting is cancelled when the temperature detected by the indoor unit pipe temperature sensor is 18~C / or higher, or after a maximum 1 minute has passed since defrosting was completed. / After cancellation, the "PREHEAT" display on the remote control disappears and the louvre operation / returns to the previous setting. / (However, the indoor unit fan operates at LOW speed for 2 minutes after cancellation, and then returns to / the previous setting.) / < When hot start operation is cancelled by temperature >

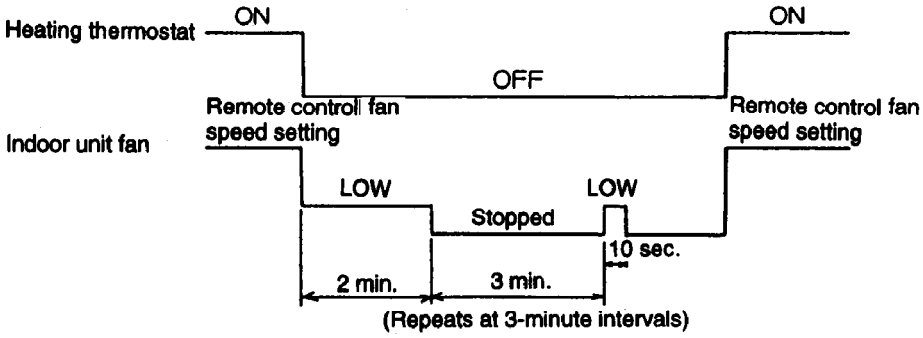


<When hot start operation is cancelled by time>



26.5. Indoor unit fan control when thermostat is off during heating mode operation

When the thermostat of the indoor unit turns off during heating mode operation, the indoor unit fan operates for 2 minutes at LOW and then stops. In addition, 5 minutes after the thermostat of the indoor unit turns off, the indoor unit fan again runs at LOW for 10 seconds, and at 3-minute intervals after that it switches back to LOW operation for 10 seconds.

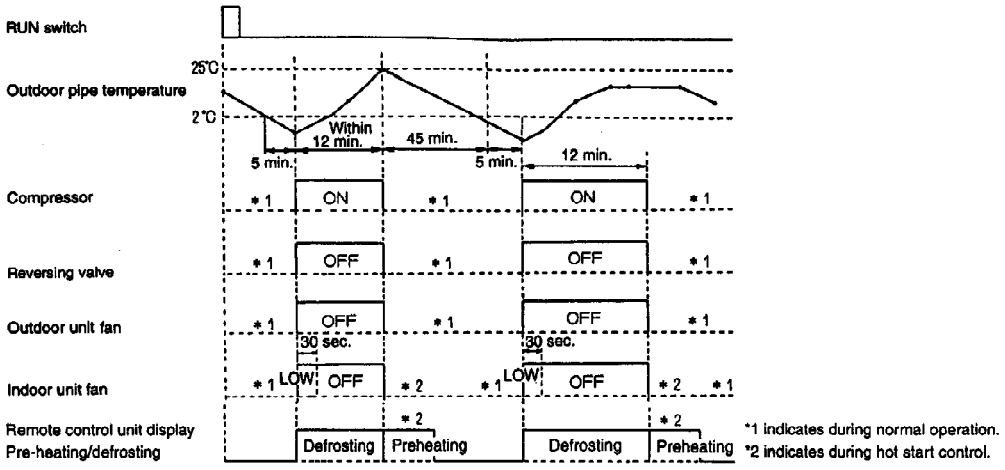


26.6. Excess heat dissipation for indoor unit

The indoor unit fan continues operating for 30 seconds after heating mode operation turns off in order to / dissipate excess heat.

1. **When heating mode operation has stopped / (LOW operation for 30 seconds)**
2. **When operation is set to a mode other than heating by means of the OPERATION MODE switch**
3. **If operation starts again during the 30 seconds mentioned in (1) above / (The fan operates at LOW speed for the remainder of the 30 seconds in (1), and then hot start commences.)**

26.7. Defrost mode operation time chart



1. **Start and completion of defrosting**
   A. **Start / During heating mode operation (including automatic heating), after the 45-minute defrosting cycle time has / passed, defrosting starts if the temperature detected by the outdoor unit heat exchanger outlet sensor is / 2~C or lower for a continuous**

5-minute period. / However, if the outdoor unit fan is stopped, the start of defrosting will be delayed by 5 minutes. / The defrosting cycle is 50 minutes from the start of heating mode operation.

B. Completion / Defrosting mode operation stops 12 minutes after it starts, or if the temperature detected by the outdoor / unit heat exchanger outlet sensor is 25~C or higher. / After defrosting is complete, hot starting commences.

C. Forced defrosting / If P8 on the outdoor unit circuit board is shorted while the compressor is 'ON' during heating mode operation / and the temperature detected by the outdoor unit heat exchanger outlet sensor is 25~C or lower, defrosting / is carried out regardless of the current starting conditions.

2. Operation

A. During defrosting, the outdoor unit turns on the compressor and turns off the outdoor unit fan and the reversing valve.

B. The indoor unit fan operates at LOW for 30 seconds after defrosting starts. After this, the indoor unit fan turns off until defrosting is complete. / (During defrosting, the louvre of the indoor unit stays at the horizontal.)

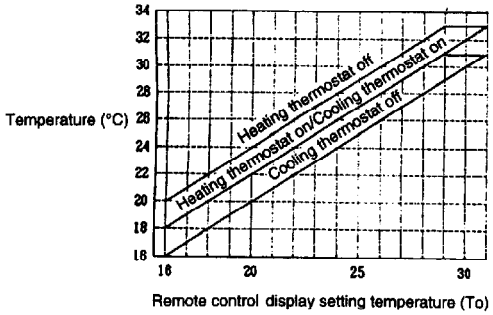
26.8. Indoor thermostat characteristic

1. Thermostat characteristic during cooling and heating modes

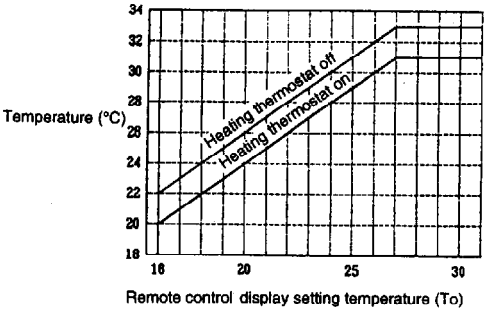
Operation mode	Setting temperature (To)	Room temperature (°C)		
		Operation	Differential	
			2.0K	4.0K
Cooling	16	O N	18.0	———
		O F F	16.0	———
	31	O N	33.0	———
		O F F	31.0	———
Heating *1	16	O N	18.0	20.0
		O F F	20.0	22.0
	29~31 *1(27~31)	O N	31.0	31.0
		O F F	33.0	33.0

*1 If jumper wire J3 on the indoor unit circuit board is disconnected, the thermostat characteristics during heating become 2 K or higher.

Thermostat characteristics during cooling and heating modes



Thermostat characteristics during heating mode (when jumper wire J3 is disconnected)



NOTE: If the remote control unit display setting temperature (To) is 29°C or higher, the heating thermostat turns on when the room temperature is 31°C.

2.Thermostat characteristics during dry mode

During dry mode operation, cooling mode operation is carried out in accordance with the indoor temperature as shown in the table below.

Mode	Indoor Temperature (°C) T	Operation details	
①	T ≧ 28	Cooling thermostat on	LO, Louvre horizontal
*②	28 > T ≧ 25	Cooling thermostat on 10 min./fan 5 min., alternate operation	LO, Louvre horizontal
*③	25 > T ≧ 21	Cooling thermostat on 5 min./fan 10 min., alternate operation	LO, Louvre horizontal
④	21 ≧ T	Cooling thermostat off	LO, Louvre horizontal

(Differential is 1.5 K)

*When modes ② and ③ are active, dry mode operation starts when the cooling thermostat turns on. When modes ② and ③ have been stopped, the 10 min./5 min. times have no relevance. However, if the indoor temperature is less than or equal to the remote control unit setting temperature, mode ④ is forcibly activated.

3.Thermostat characteristics during automatic changeover operation

①Settings at the start of automatic changeover operation

When operation starts, or when operation changes from some other mode to automatic changeover mode, it starts at the temperature characteristics given in the table below.

Indoor temperature (T) °C	Initial setting
T < remote control display temperature - 2 (°C)	Heating mode operation, thermostat on
Remote control display temperature ≧ T	Heating mode operation, thermostat off (fan mode operation)
Remote control display temperature ≦ T	Cooling mode operation, thermostat off (fan mode operation)
Remote control display temperature + 2 (°C) < T	Cooling mode operation, thermostat on

2 (°C): Thermostat differential

②Thermostat characteristics when switching between cooling and heating mode operation

Switching between cooling mode and heating mode operation is carried out as shown in the table below. However, during automatic operation, the operation does not change again until 10 minutes after the thermostat has switched off in either cooling mode or heating mode.

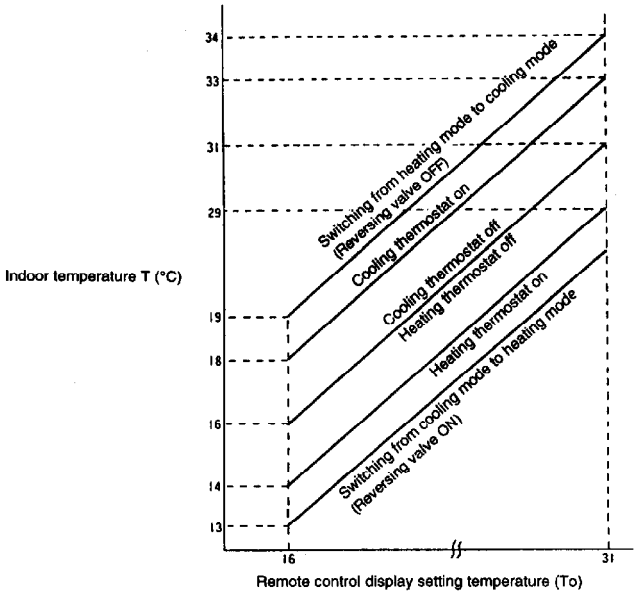
(The 10-minute timer is cancelled when operation is changed to another mode or when operation stops and the thermostat turns on.)

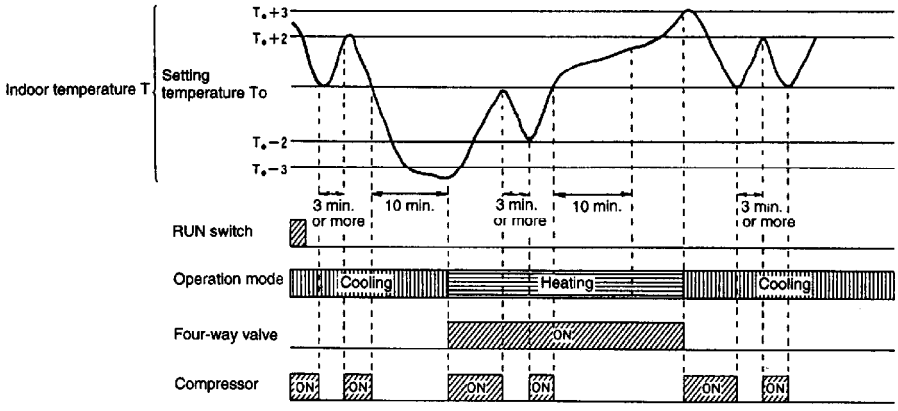
Indoor temperature (T) °C	Operation switching
T ≧ Remote control display temperature + 3 (°C)	Heating mode → Cooling mode
T ≦ Remote control display temperature - 3 (°C)	Cooling mode → Heating mode

4.Thermostat characteristic during cooling mode and heating mode operation. / The thermostat on/off characteristic in both operation modes are given in the table below.

Operation mode	Indoor temperature (T) °C	Operation
Cooling mode	T > Remote control unit display temperature + 2 (°C)	Cooling thermostat on
	T ≦ Remote control unit display temperature	Cooling thermostat off
Heating mode	T < Remote control unit display temperature - 2 (°C)	Heating thermostat on
	T ≧ Remote control unit display temperature	Heating thermostat off

Indoor temperature thermostat characteristics during automatic changeover operation





Automatic cooling/heating mode operation time chart

26.9. Indoor unit fan control

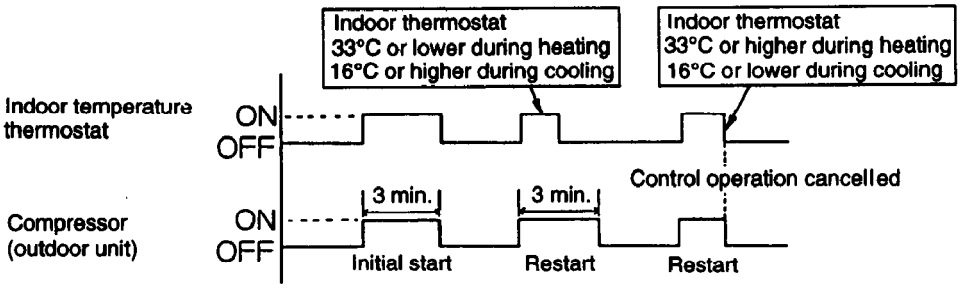
1. **Fixing at LO, MED or HI / When LO, MED or HI is set, the relay switches and operation is carried out at that setting.**
2. **Automatic fan speed / When set to AUTO, the indoor unit fan operation changes as shown in the table below.**

(Indoor temperature)–(Setting temperature) (Units: K)

	HI	MED	LO
Cooling mode	+ 3 or higher	+ 1.5 ~ 3	Less than + 1.5
Heating mode	- 3 or lower	- 1.6 ~ -3	More than -1.5
Fan mode	MED irrespective of temperature		

26.10. Forced operation during restart

The compressor will not stop operating for 3 minutes after cooling mode or heating mode operation starts, even if the indoor unit thermostat turns off. (However, the compressor will stop operating during this time if the indoor unit air intake temperature exceeds 33~C during heating mode operation or if the indoor unit air intake temperature drops below 16~C during cooling mode operation.)



26.11. Outdoor unit fan excess heat dissipation control

1. **Start / Carried out when the compressor switches from on to off (when the remote control unit is used to stop operation)**
2. **Operation / The outdoor unit fan runs at SUPER HI speed for approximately 60 seconds and then stops.**

26.12. Discharge temperature control

1. **Operation / When the discharge temperature sensor detects a temperature of 100~C or higher during cooling mode operation, the liquid bypass valve is turned on.**
2. **Cancelling / When the discharge temperature sensor detects a temperature of 70~C or lower, the liquid bypass valve is turned off.**

26.13. Emergency operation

When the emergency operation switch (DSW1) on the outdoor unit printed circuit board is set to the emergency setting, then emergency operation is enabled. This allows normal operation to continue, with all abnormalities other than a discharge temperature abnormality, high pressure abnormality or overcurrent abnormality being ignored.

26.14. DIP switch settings

- Indoor unit printed circuit board (DSW1)

No.	Setting type	Factory shipment	Remarks
1	Group address setting (twin/triple address setting)	OFF	When group operation is being carried out using the remote control, this address is set in order to control the order of starting for the indoor units. (If No. 8 is ON, twin/triple address setting is carried out.)
2		OFF	
3		OFF	
4		OFF	
5	Automatic restart	ON	When set to ON, operation after a power outage resumes at the settings which were in effect before the outage. (The backup time is semipermanent.)
6	Filter sign time	ON	When set to ON, the filter sign times can be set to 2,500 times.
7	Louvre control	*ON	When set to OFF, louvre control is disabled.
8	Twin/triple slave unit setting	OFF	When set to ON, the unit is designated as a slave unit.

27. INSTALLATION (INDOOR UNIT)

Precautions in terms of safety

Carry out the installation work with reliability after thorough reading of this "Precautions in terms of safety".

- Precautions shown here are differentiated between ⚠**Warnings** and ⚠**Cautions**, those that have much chance for leading to significant result such as fatality or serious injury if wrong installation should be carried out are listed compiling them especially into the column of ⚠**Warnings**.
  However, even in the case of items which are listed in the column of ⚠ **Cautions**, such items also a chance for leading to significant result depending on the situations.
  In either case, important descriptions regarding the safety are listed, then observe them without fail.

- As to indications with illustration

⚠ This mark means "Caution" or "Warning".
⃠ This mark means "Prohibition".
❗ This mark means "Compulsion".

- After installation work has been completed, not only make sure that the unit is free from any abnormal condition through the execution of dry run but also explain how to use and how to perform maintenance of this unit to the customer according to the instruction manual.
  In addition, request the customer to keep this manual for installation work together with instruction manual.

⚠ Warnings

▲ As to installation, request the distributor or vendor to perform it. Imperfection in installation caused by that having been carried out by the customer himself leads to water leakage, electric shock, fire, etc.

▲ Carry out the installation work with reliability according to this manual for installation work. Imperfection in installation leads to water leakage, electric shock, fire, etc.

▲ Carry out the installation with reliability on the place that bears the weight of this unit sufficiently. Insufficient strength leads to injury due to falling of the unit.

▲ Carry out predetermined installation work in preparation for strong wind such as typhoon, earthquake. Imperfection in installation work may lead to accident arisen from overturn, etc.

▲ Electric work shall be carried out by the person qualified as an electric worker according to "Technical standards regarding electric installation", and manual for installation work, and use exclusive circuit without fail. Presence of insufficient capacity in power circuit or imperfection in execution leads to electric shock, fire, etc.

▲ Wiring shall be connected securely using specified cables and fix them securely so that external force of the cables may not transfer to the terminal connection section. Imperfect connection and fixing leads to fire, etc.

▲ If installing inside a small room, measures should be taken to prevent refrigerant levels from building up to critical concentrations in the event of a refrigerant leak occurring. Please discuss with the place of purchase for advice on what measures may be necessary to prevent critical concentrations being exceeded. If the refrigerant leaks and reaches critical concentration levels, there is the danger that death from suffocation may result.

▲ Securely attach the protective covers for the outdoor unit connection cable and power cord so that they do not lift up after installation. If the covers are not properly attached and installed, the terminal connections may overheat, and fire or electric shock may result.

⚠ Warnings

▲ If refrigerant gas escapes during installation, ventilate the affected area. If the refrigerant gas comes into contact with sparks or naked flames, it will cause toxic gases to be generated.

▲ Once installation work is complete, check that there are no refrigerant gas leaks. If refrigerant gas leaks into the room and comes into contact with sparks or flames from a fan heater, stove or kitchen range, it will cause toxic gases to be generated.

⚠ Cautions

▲ Carry out earthing work
Do not connect the earth return to the gas pipe, water line pipe, lightning rod, earth return of the telephone.
Imperfection in earth return may lead to electric shock.

▲ Do not install the unit at the place where the possibility of inflammable gas leakage exists. If such gas leakage should arise and the gas builds up around the unit, such situation may lead to ignition.

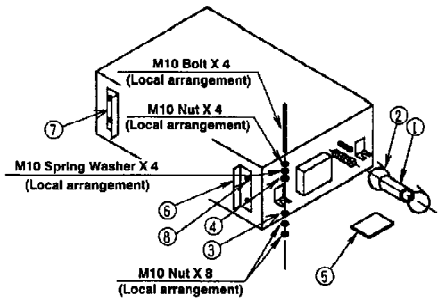
▲ Mounting of the earth leakage breaker is required. Omission in mounting of the earth leakage breaker may lead to electric shock.

▲ Drain piping should be made to ensure secure drainage according to the manual for installation work and carry out the thermal insulation to prevent the occurrence of condensation. Imperfection in piping work leads to water leakage and may cause the house and property, etc. to become wet.

▲ Position the indoor units, outdoor units, power cords and indoor/outdoor unit connection cables so that they are at least 1 metre away from televisions and radios. This is to avoid problems such as interference with picture and/or sound. (However, note that depending on the electromagnetic wave conditions, interference may still occur even if the separation distance is more than 1 metre.)

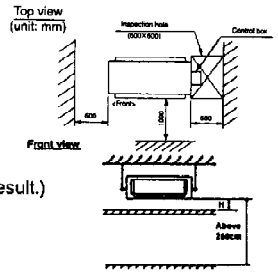
1. ACCESSORIES PACKED IN THE INDOOR UNIT CONTAINER

NO.	Parts name	Q'ty
1	Thermal insulator for refrigerant pipe	1
2	Hose clip for thermal insulator	3
3	M10 Flange washer	4
4	M10 Flat washer	4
5	Thermal insulator for drainage hole	1
6	Duct flange side R	1
7	Duct flange side L	1
8	Screw	4



- (6) and (7) should be installed when the duct will be installed at the return hole.

2. SELECTING THE LOCATION OF THE INDOOR UNIT

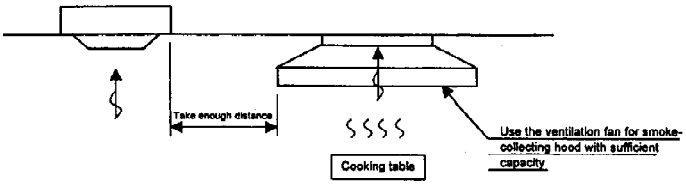


- The place shall easily bear a load exceeding four times the indoor unit's weight.
- The place shall be able to inspect the unit as the figure.
- The place where the unit shall be levelled.
- The place shall allow easy water drainage. (Suitable dimension "H" is necessary to get slope to drain as figure.)
- The place shall easily connect with the outdoor unit.
- The place where the unit is not affected by an electrical noise.
- Do not install the indoor unit in a laundry room. (Electric shocks may result.)
- The indoor unit must be free from any obstacles in path of air inlet and outlet, and must allow spreading of air throughout the room.
- The indoor unit must be away from heat and steam sources, but avoid installing it near an entrance.
- Prepare a power outlet for the indoor unit nearby.
- The indoor unit must be at least 3m away from any noise-generating equipment. The electrical wiring must be shielded with steel conduit.
- If the power supply is subject to noise generation, add a suppressor.

✳ If the height from floor to ceiling exceeds three metres, air flow distribution deteriorates and the effect is decreased.

NOTE ● Thoroughly study the following installation locations:

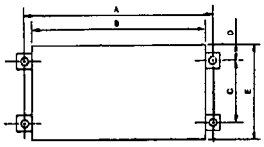
1. In such places as restaurants and kitchens, considerable amount of oil steam and flour adhere to the turbo fan, the fin of the heat exchanger and the drain pump, resulting in heat exchange reduction, spraying, dispersing of water drops, drain pump malfunction, etc.
   - Make sure that the ventilation fan for smoke-collecting hood on a cooking table has sufficient capacity so that it draws oily steam which should not flow into the suction of the air conditioner.
   - Make enough distance from cooking room to install the airconditioner in such place where it may not suck in oily steam.



2. Avoid installing air conditioner in such circumstances where cutting oil mist or iron powder is in suspension in factories, etc.
3. Avoid places where inflammable gas is generated, flows-in, contaminated, or leaked.
4. Avoid places where sulphurous acid gas or corrosive gas is generated.
5. Avoid places near high frequency generators.

3. INSTALLATION OF INDOOR UNIT

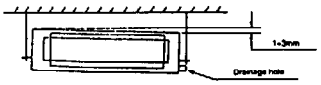
POSITION OF SUSPENSION BOLT



(unit: mm)

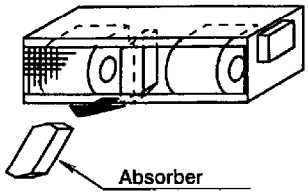
	A	B	C	D	E
CS-A24BD3P CS-A28BD3P	1060	1000	523	64	650
CS-A34BD3P CS-A43BD3P CS-A50BD3P	1560	1500	523	64	650

- Apply a joint-canvas between the unit and duct to absorb unnecessary vibration.
- Install the unit leaning to a drainage hole side as a figure for easy water drainage.



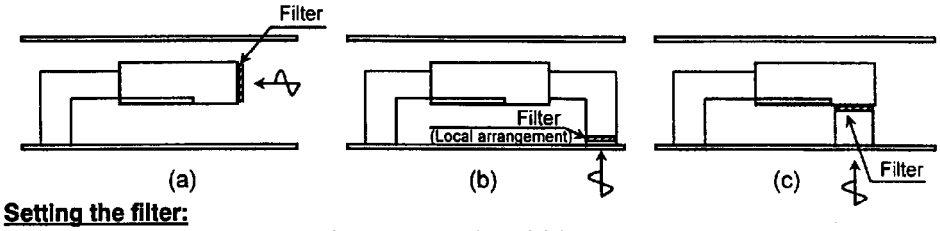
⚠ Caution

- Remove the absorber at air return hole before installation.



INSTALLATION OF DUCT

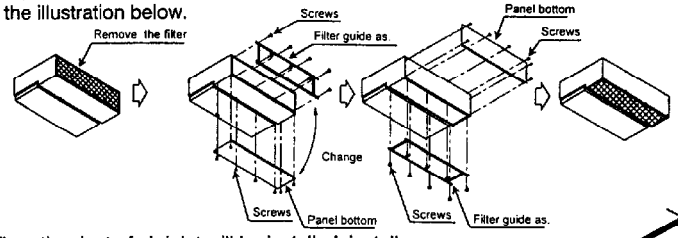
1. The duct of the air inlet could be installed by the three situations as shown in the illustration below (a) ~ (c).



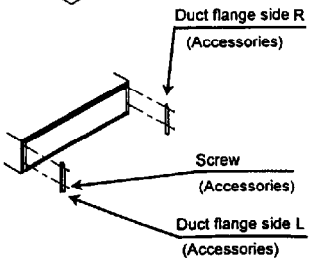
Setting the filter:

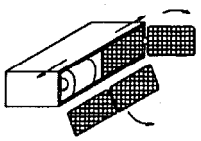
Case of (a): Reserve the filter and not install the duct of the air inlet.
Case of (b): Remove the filter (local arrangement) and install the duct of the air inlet.
Case of (c): Change the panel bottom to install the duct of the air inlet.

2. The panel bottom could be changed into the air inlet (case of (c)) as shown in the illustration below.



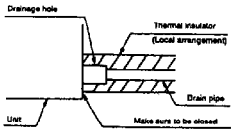
3. When the duct of air inlet will be installed, install the duct flange side R & L to the air inlet with accessories as shown in the illustration.
4. The filter could be removed from any one of three directions as shown in the illustration below.

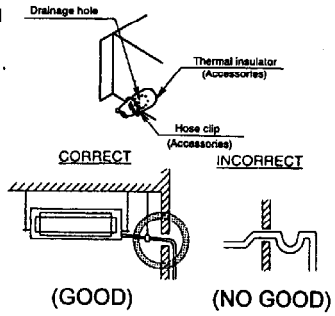




4. INDOOR UNIT DRAIN PIPING

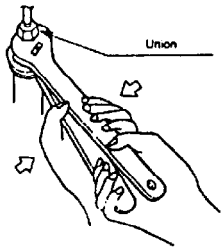
- The unit has two drainage holes at both side.
  The drainage hole without connection needs seal and thermal insulation with accessories.
- Always lay the drain with downward inclination (1/50 to 1/100).
  Prevent any upward flow or reverse flow in any part.
- 5mm or thicker formed thermal insulator shall always be provided for the drain pipe.





5. PIPING CONNECTION

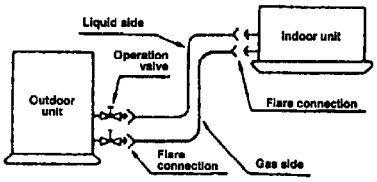
1. Form the piping according to its routing. Avoid bending and bending back the same piping point more than three times. (This will result in hardening the pipe.)
2. After deforming the piping, align centers of the union fitting of the indoor unit and the piping, and tighten them firmly with wrenches.
3. Connect pipe to the service valve or ball valve which is located below the outdoor unit.
4. After completed the piping connection, be sure to check if there is gas leakage in indoor and outdoor connection.



MODEL NAME	Liquid side piping	Gas side piping
CS-A24BD3P	ø 6.35	ø 15.88
CS-A28BD3P	ø 9.52	ø 15.88
CS-A34BD3P CS-A43BD3P CS-A50BD3P	ø 9.52	ø 19.05

Vacuum drying

After completing the piping connection, execute vacuum drying for the connection piping and the indoor unit.
The vacuum drying must be carried out using the service ports of both the liquid and gas side valves.



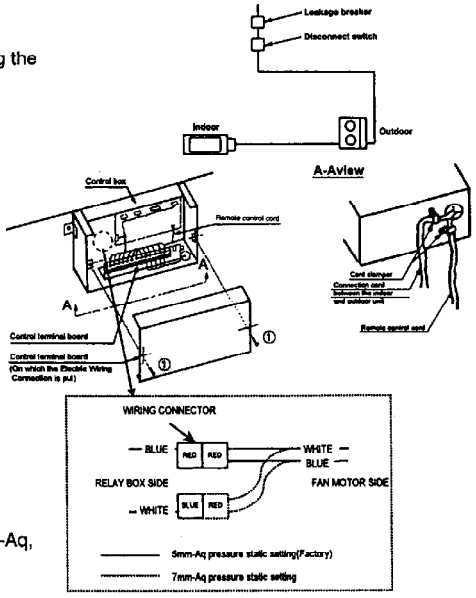
CAUTION

Use two wrenches and tighten with regular torque.

Flare nut fastening torque N-m (kgf-cm)			
ø 6.35mm	18 (180)	ø 15.88mm	65 (650)
ø 9.52mm	42 (420)	ø 19.05mm	100 (1000)
ø 12.7mm	55 (550)		

6. ELECTRICAL WIRING

- All wiring must comply with local requirements.
- Select a power source that is capable of supplying the current required by the air conditioner.



WIRING CONNECTION

<INDOOR UNIT>

- Remove the control box cover for electrical connection between the indoor and outdoor unit. (Remove two screws ①).
- Use the cord clamper to fix the cord.

Caution

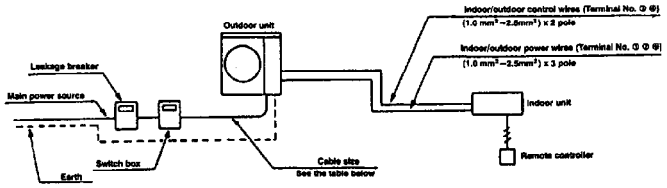
Make sure that screws of the terminal are free from looseness. Fastening torque
M4 ... 118N•cm (12kgf•cm)
M5 ... 196N•cm (20kgf•cm)

STATIC PRESSURE SETTING

- The static pressure of factory setting is 5mm-Aq.
- When you require the higher static pressure 7mm-Aq, change the connector in the relay box.

7. ELECTRICAL WIRING

1. All wiring must comply with LOCAL REGULATIONS.
2. Select a power source that is capable of supplying the current required by the air conditioner.
3. Feed the power source to the unit via a distribution switchboard designed for this purpose.
4. Install a leakage breaker if the electrical wiring is subject to excessive moisture.
5. The terminal screws inside the control box may be loose due to vibration during transport. Check the screws for loose connection. (Running the air conditioner with loose connection can overload and damage electrical components.)
6. Check that the cable size, overcurrent devices, and switch specifications comply with those given in the table.
   - The wire diameters in the table indicate values compatible with a metal or resin conduit that can pass up to three such wires.
   - The overall length in the table indicates a value when the main power cord is subject to a voltage drop of 1%.
7. Always ground the air conditioner with a grounding wire and screw to meet the LOCAL REGULATIONS.
8. Be sure to connect the wires correctly to terminal block with connecting the crimp type ring terminal to the wires.



⚠ Warning

All electric work must be carried out by a qualified technician according to proper technical standards for electrical work and according to installation manual for installation work, and proper specified circuits must be used. If circuits with insuffucient capacity are used, or if electrical work is not carried out properly, electric shocks or fire may result.

- Use a standard power cord for Europe (such as H05RN-F or H07RN-F which confirms to CENELEC (HAR) rating specifications.)

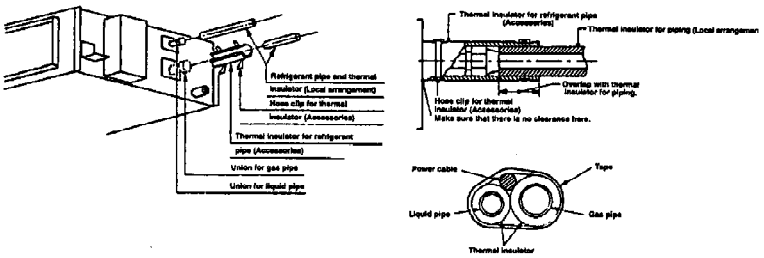
Cautions

- Where ground work (earth) is carried out, do not connect the ground return to the gas pipe, water line pipe, grounded circuit of the telephone and lightning rod, or ground circuit of other product in which earth leakage breaker is incorporated. (Such action is prohibited by statute, etc.)
- In order to prevent malfunction (noise generation) of the equipment, carry out the wiring of the control cable for indoor and outdoor units (signal cable) isolating it from other power cable with separate cable.
- Use a standard power cord for Europe (such as H05RN-F or H07RN-F which conforms to CENELEC (HAR) rating specifications.)

8. HEAT INSULATION

THERMAL INSULATION

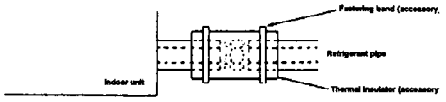
<INDOOR UNIT>


Refrigerant pipe and thermal insulator (Local arrangement)
Hose clip for thermal insulator (Accessories)
Thermal insulator for refrigerant pipe (Accessories)
Union for gas pipe
Union for liquid pipe
Thermal insulator for refrigerant pipe (Accessories)
Thermal insulator for piping (Local arrangement)
Overlap with thermal insulator for piping.
Hose clip for thermal insulator (Accessories)
Make sure that there is no clearance here.
Power cable
Tape
Liquid pipe
Gas pipe
Thermal insulator

<REFRIGERANT PIPE>

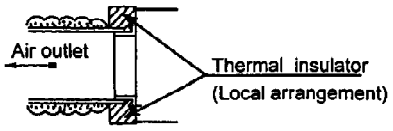
- Insulate and tape both the gas piping and liquid piping.

1. For the refrigerant and drain pipings, execute referencing the piping procedure label packed with the unit body.
2. Use the heat insulation material for the refrigerant piping which has an excellent heat-resistance (over 120°C).



3. Precautions in high humidity circumstance:
   This air conditioner has been tested according to the "JIS Standard Conditions with Mist" and confirmed that there is not any fault. However, if it is operated for a long time in high humid atmosphere (dew point temperature: more than 23°C), water drops are liable to fall. In this case, add heat insulation material according to the following procedure:
   - Heat insulation material to be prepared ... Adiabatic glass wool with thickness 10 to 20mm
   - Stick glass wool on all air conditioners that are located in ceiling atmosphere.
   - In addition to the normal heat insulation (thickness: more than 8mm) for refrigerant piping (gas piping: thick piping) and drain piping, add further 10mm to 30mm thickness material.

4. The duct connection of the air outlet needs thermal insulation.



9. SELF-DIAGNOSIS FUNCTION

- The LED1 (green) illuminates to indicate that the microprocessor on the microprocessor circuit board is operating normally. If the LED is switched off or is flashing irregularly, check the power supply, and turn it off and then back on again.

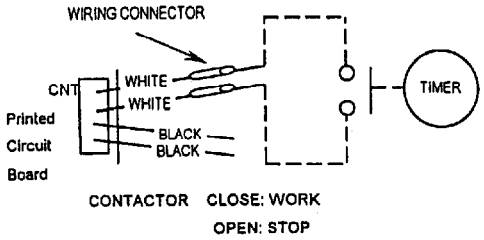
- The display screen on the wired remote control unit and the self-diagnosis LEDs (red) on the printed circuit board in the indoor unit can be used to indicate where the location of a problem is. Refer to the table below to remove the cause of the problem, and then re-start the air conditioner unit.
- If the "CHECK" display on the wired remote control unit is flashing, the details of the problem(s) are displayed on the timer display screen each time the CHECK button is pressed. Further details of the problem can be displayed by pressing the TIMER ON/OFF button while the general problem details are being displayed.
- If the "CHECK" display on the wired remote control unit is not flashing, press the CHECK button continuously for 5 seconds or more to display the problem details for the last problem or the problem before that. You can then switch between the displays for the previous problem and the problem before that by pressing the TIMER, FORWARD or BACK buttons. Press the CHECK button once more to return to the normal display.
- If the problem disappears and operation returns to normal, the CHECK display on the remote control unit will switch off, but the self-diagnosis LED will remain illuminated until operation is resumed.

Wired remote control unit display		Indoor unit circuit board	Outdoor unit circuit board LED	Location of problem	Check location
Abnormal display	Detail display	LED 2			
F15	- 01	○	For further details, refer to the section on outdoor unit self-diagnosis.	Drain level float switch problem	Drain pump and drain pipe, indoor unit connectors CN6 & CN10, or relay connector
F16	- 01	○		Louvre switch problem	Louvre motor, veneer panel connection terminal, or indoor unit connectors CN1 & CN6
F17	- 01	○		Option problem	Option connection terminals
F20	- 01	○		Indoor temperature thermistor problem	Indoor temperature thermistor lead wire or indoor unit connector CN1
	- 02	○		Remote control thermistor problem	Remote control thermistor
F21	- 01	○		Pipe temperature thermistor problem (indoor unit side)	Pipe temperature thermistor lead wire or indoor unit connector CN1
F25	- 01	○		Centralized control address overlap problem	Check settings for optional centralized control circuit board address switch
F26	- 01	○		Remote control transmission wire open circuit problem	Remote control unit cable and connection terminals
	- 02	○		Remote control transmission problem	Check the transmission wave pattern
F27	- 01	○		Indoor/outdoor unit transmission wire open circuit problem	Indoor/outdoor unit connection cable and connection terminals, or indoor unit and outdoor unit power supplies
	- 02	○		Indoor/outdoor unit transmission problem	Check the transmission wave pattern
F29	- ○○	○		Setting problem	Contact the place of purchase.
F30~F49	- ○○	○		Outdoor unit problem	Refer to the section on outdoor unit self-diagnosis.

10. USE OF TIMER INPUT•FAN OUTPUT

Refer to the following diagram for connecting to Printed Circuit Board.

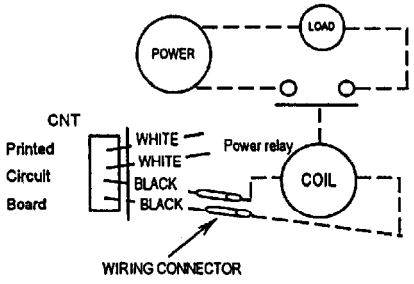
<TIMER INPUT> Connect to the white cord



Connect another circuit contactor of the timer.

<FAN OUTPUT> Connect to the black cord

Power relay (arrangement): (coil spec. DC12V 0.9W)

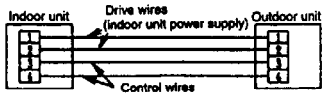


11. TEST OPERATION

- Test operation can be carried out using the remote control unit or at the outdoor unit. (If carrying out test operation at the outdoor unit, refer to "Test Operation" in the outdoor unit installation manual.)
- If using the remote control unit to carry out test operation, follow the procedure given below.

- First, press the RUN button.
- Then press the TEST button within 1 minute of pressing the RUN button.
- Next, select the operation modes. (When carrying out test operation, be sure to select cooling mode first, and run the units in this mode for 5 minutes or more.)
- The temperature of the indoor unit pipes will be shown on the temperature setting display. (At the start of test operation, it may take up to 1 minute for air conditioner number, switching time and other displays to appear.)
- After operation modes have been selected, momentarily stop the compressor.
- Press the RUN button or the TEST button once more to cancel test operation mode.

NOTE 1 These units are equipped with connection error prevention circuits. If the units do not operate, it is possible that the connection error prevention circuits have operated. In such cases, check that the drive wires (connected to terminals [1] and [2]) and the control wires (connected to terminals [3] and [4]) are connected correctly. If they are connected incorrectly, connect them correctly. Normal operation should then commence.



NOTE 2 Do not short the remote control unit wires to each other. (The protection circuit will be activated and the units will not operate.) Once the cause of the short is eliminated, normal operation will then be possible.

NOTE 3 When running the units in heating mode during test operation, be sure to run the units in cooling mode first before selecting this mode. If heating mode is selected first, it may cause problem with operation of the compressor.

NOTE 4 Test operation should be carried out for a minimum of 5 minutes. (Test operation will be cancelled automatically after 30 minutes.)

NOTE 5 Test operation mode should always be cancelled once test operation itself has been completed.

12. CHECK THE FOLLOWING ITEMS WHEN INSTALLATION IS COMPLETE

- After completing work be sure to measure and record trial run properties, and store measuring data, etc.
- Measuring items are room temperature•outside temperature•suction temperature•blow out temperature•wind speed•wind amount•voltage•current•abnormal vibration•abnormal noise•running pressure•pipe temperature•withstand pressure and air tight pressure.
- As for structure and appearance, check on the below items.

☐ Is circulation of air adequate?
☐ Is draining smooth?
☐ Is heat insulation complete? (refrigerant and drain piping)
☐ Is there any leakage of refrigerant?
☐ Is remote control switch operated?
☐ Are there any faulty wiring?
☐ Are not terminal screws loosened?
☐ Tightening torque (N.cm {kgf.cm})
M4 ... 118 {12}, M5 ... 196 {20}
M6 ... 245 {25}, M8 ... 588 {61}

13. DELIVERY TO OUR CUSTOMERS

- Teach the customer the operation and maintenance procedures, using the operation manual (air filter cleaning, temperature control, etc.)

As for work specifications of the outdoor unit, read the WORK INSTRUCTION attached to the outdoor unit.

Wired Remote Control Installation Manual

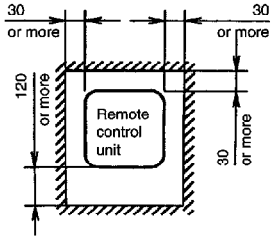
- Before installing the wired remote control, be sure to thoroughly read the "Notes with regard to safety" section of the installation manual provided with the indoor unit.
- After installing the wired remote control, carry out a test operation to check that the remote control functions properly, and also explain the operation and cleaning procedures to the customer in accordance with the details in instruction manual. Furthermore, ask the customer to keep this installation manual and the instruction manual in a safe place for later reference.

1. ACCESSORIES SUPPLIED WITH WIRED REMOTE CONTROL

Name	Q'ty	Diagram	Remark	Name	Q'ty	Diagram	Remark
Remote control	1			4mm screw	3		Installing the remote control to a wall
				M4 screw	3		Installing the remote control to an outlet box
Remote control cable	1		Length (10m)	Round terminal	2		Connecting to indoor unit terminal block

2. NOTES REGARDING WIRED REMOTE CONTROL SETTING-UP LOCATION

- Select a place where the remote control can be operated easily (after obtaining approval from the building's owner).
- Install in a place which is away from direct sunlight and as free from humidity as possible.
- Install in a place which is as flat as possible to avoid warping of the remote control.
  (If installed to a wall an uneven surface, damage to the LCD case or operation problems may result.)
- Install in a place where the LCD can be seen easily. If the remote control is installed somewhere which is too low or too high, it may be difficult to read the LCD. (Standard height from the floor is 1.2 to 1.5 meters.)
- Avoid installing the remote control cable near refrigerant pipes or drain pipes.
- Install the remote control cable at least 5 cm away from other electric wires (including stereo and TV cables) to avoid mis-operation (electromagnetic noise).
- If passing the remote control cable through a wall, be sure to install a water trap above the cable.
- Allow sufficient space around the remote control as shown in the illustration at right.
  Secure the remote control lower case to the wall or to an outlet.

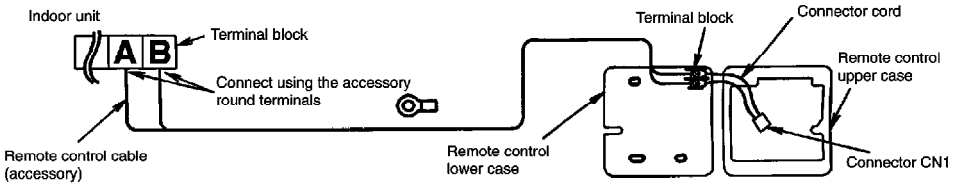


3. REMOTE CONTROL INSTALLATION

- Be sure to turn off the main power before installing and connecting the remote control.
  (If the remote control is connected while the power is still turned on, the remote control displays may not appear.)
  If no displays appear on the remote control, check while referring to "If no remote control displays appear" in 5 Test operation.
- The remote control cable is live during use, so take care not to short it.

Remote control wiring

- Connect the indoor unit and the remote control as shown in the illustration below.
- The remote control cable is non-polar.
- At the time of shipment from the factory, the connector cable used to connect the terminal block and connector CN1 is disconnected. When connecting the remote control wiring and installing the remote control, be sure to connect the cord to the connector CN1.



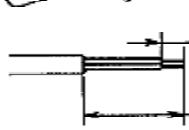
Extending the remote control cable

- Solder a sheathed PVC cord or cable (0.5 – 2 mm²) with specifications among those given below to the remote control end of the accessory remote control cable (10 m).
  - * PVC round cabtire cord IEC 502
  - * 600V PVC-insulated PVC sheathed round cable IEC 227-4
  - * 600V PVC-insulated PVC sheathed flat cable IEC 227-4

NOTE The maximum possible length for the remote control cable is 200 m.

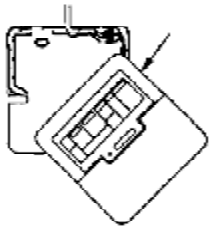
Remote control installation procedure

- Remove the remote control lower case.
  (Insert a flat-tipped screwdriver or similar 2 to 3 mm into one of the gaps at the bottom of the case, and then twist the screwdriver to open. (Refer to the illustration at right.))
  Be careful not to damage the lower case.
- Secure the lower case to the wall or outlet box.
  (Refer to the illustration at right for the embedded and exposed positions for remote control cable.)



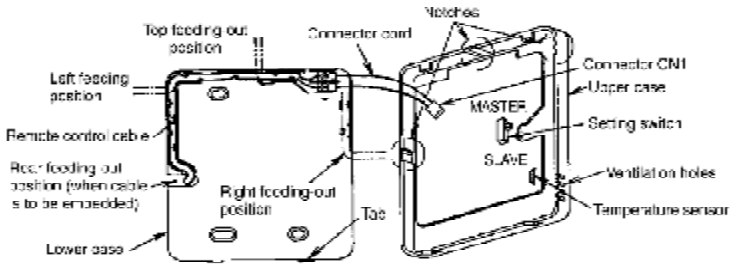
NOTE

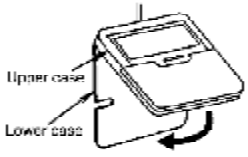
- Be sure to use only the accessory screws.
- Do not bend the lower case when tightening the screws. (If the screws are overtightened, damage may result.)
- Do not remove the protective tape which is affixed to the upper case circuit board.



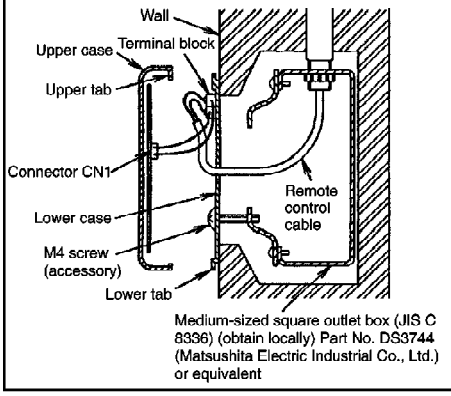
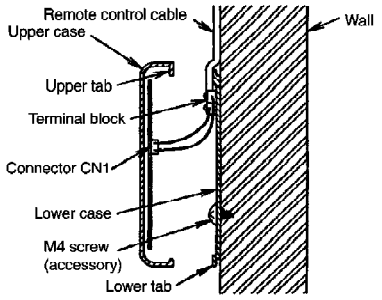
- If installing the remote control with the remote control cable exposed, use pliers to cut a notch into the upper case. (The feeding-out direction can be either up or to the left or right)
- Strip the end of the remote control cable which is to be connected to the remote control. (Refer to the illustration at right)
- Route the remote control cable inside the lower case in accordance with the intended feeding-out direction. (Refer to the illustration below.)
  Securely connect connector CN1. (If it is not connected the remote control will not operate.)

NOTE After connecting the connector, do not suspend the upper case by its own weight, otherwise the connector cord may break.





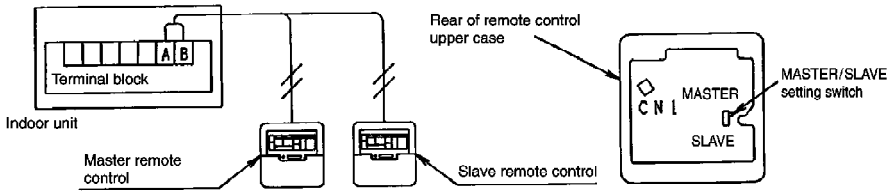
- If controlling using two remote controls, refer to "Control using two remote controls" in "4 Settings".
- Secure the upper case to the lower case.
  (Hook the upper tab of the upper case into the lower case, and then push the upper case until it snaps shut onto the lower case tab, while being careful not to clamp the remote control cable and the connector cord.)

If remote control cable is embedded	If installing with the remote control cable exposed
1. Embed an outlet box (JIS C 8336) into the wall, and then secure the remote control base plate to the outlet box with the two accessory M4 screws. Make sure that the base plate is flat against the wall at this time, with no bending (looseness) 2. Pass the remote control cable into the box and then install the remote control.  Medium-sized square outlet box (JIS C 8336) (obtain locally) Part No. DS3744 (Matsushita Electric Industrial Co., Ltd.) or equivalent	1. Secure the remote control base plate to the wall with the two accessory 4 mm screws. 2. The feeding-out direction for the remote control cable can be either up or to the left or right. (Refer to the illustration above.) After determining the feeding-out direction, use pliers to make a notch in the cover. 3. Route the remote control cable as shown in the illustration above. Pull the cord firmly around the outside of the base plate at this time. 

4. SETTINGS

Control using two remote control

- Up to two remote controls can be installed for a single indoor unit, and either remote control can be used to operate the indoor unit.
- The indoor unit can be operated with the last switch pressed having priority.
  (1) Decide which is to be the master and which is to be the slave remote control.
  The master or slave states of the remote control is set automatically. The MASTER/SLAVE setting switch can also be use to make the setting manually, however if a manual setting is made, that manual setting has priority.
  Be sure to turn off the main power before making a manual setting.
  (2) Connect the remote controls.
  Connect both remote control to terminals (A) and (B) on the indoor unit terminal block (non-polar).



Group control

- All in group will be remote control thermistor setting when using the remote control thermistor.
- Up to a maximum of 16 indoor units can be connected at the time of group control.
  (Do not connect heat pump unit with cooling only unit.)
- Indoor unit No. is possible to set automatically at the time of group control. However, which indoor unit will be which number is unknown.
  Indoor unit No. is also possible to set manually with DIP switches. Since manual address setting is priority, when performing automatic address setting after doing manual setting turn off all DIP switches from No. 1 to No. 4, and then stop the operation and press three switches such as [AIR SWING AUTO] [OPERATION] • [A/C No.] at the same time.
  (Do not use manual address setting and automatic address setting together.)

Manual Setting

Indoor unit No.	1	2	3	4	5	6	7	8
DIP switch (DSW1) address setting on indoor unit printed circuit board.								
A/C No. setting	Unnecessary operation	1 ~ ON	2 ~ ON	1, 2 ~ ON	3 ~ ON	1, 3 ~ ON	2, 3 ~ ON	1, 2, 3 ~ ON
Indoor unit No.	9	10	11	12	13	14	15	16
DIP switch (DSW1) address setting on indoor unit printed circuit board.								
A/C No. setting	4 ~ ON	1, 4 ~ ON	2, 4 ~ ON	1, 2, 4 ~ ON	3, 4 ~ ON	1, 3, 4 ~ ON	2, 3, 4 ~ ON	1, 2, 3, 4 ~ ON

Automatic address resetting for group control

- The address settings for group control (air conditioner Nos. 1 to 16) can be reset automatically.
  (1) While operation is stopped, press the AUTO switch. A/C NO. and OPERATION switches simultaneously.

Switching the thermistor

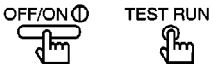
- The temperature detection thermistor can be switched between the thermistor at the indoor unit and the thermistor at the remote control. However, do not switch to the remote control thermistor if using two remote controls.
  (1) While operation is stopped, press and hold the TEST RUN switch, and then press the UP and DOWN switches together.
  (2) "00" or "01" will appear in the time display.
  (3) Press the ▲ or ▼ timer switches to switch display between "00" and "01".
  "00" ... Indoor unit setting (factory default)
  "01" ... Remote control setting
  (4) Press the SET switch. (Be sure to press the SET switch so that normal operation mode can be resumed.)
- Repeat the procedure in steps (1) to (4) to change the setting again.

Energy save setting

- Upper and lower limits can be set for the setting temperature during cooling and heating operation (Energy save setting)
  (1) While operation is stopped, press the UP and DOWN switches simultaneously.
  (2) "0" (zero) will flash in the clock display at this time, so press the SET switch.
  (3) To set an upper limit (Setting a temperature above the energy save temperature will not be possible).
  Press the OPERATION switch unit HEAT is displayed.
  Press the UP or DOWN switch to set the temperature.
  Press the SET switch.
  Example: If the heating display is set to 28C, setting the temperature to higher than 28C will not be possible.
  (4) To set a lower limit (Setting a temperature below the energy save temperature will not be possible).
  Press the OPERATION switch unit COOL is displayed.
  Press the UP or DOWN switch to set the temperature.
  Press the SET switch.
  Example: If the cooling display is set to 22C, setting the temperature to lower than 22C will not be possible.
  (5) If the CANCEL switch is pressed during steps (3) or (4) above, the energy save setting will be cleared.
- Press the SET switch or the CANCEL switch to return to normal operation mode after making an energy save setting in steps (3) to (5).

5. TEST OPERATION

- Turn on the main power.
- After 3 minutes have passed since the power was turned on, press the OFF/ON switch on the remote control. (No operation occurs within 3 minutes after the power was turned on.)
- Press the TEST RUN switch within 1 minute of pressing the OFF/ON switch.
- Next, select the operation mode. (Be sure to select cooling mode first, and run the unit in this mode for 5 minutes or more.)
- Press the OFF/ON switch or the TEST RUN switch to cancel test operation.
- Test operation will be cancelled automatically after 30 minutes.



If no remote control displays appear

- Check whether LED1 (green) on the indoor unit printed circuit board is illuminated or switched off.
  If it is switched off, check the circuits on the indoor unit printed circuit board.
- Check once more that the remote control cable is securely connected. (Check for loose terminals, poor contacts, connection positions terminal block, etc.)

- If the above checks show that nothing is wrong but nothing appears on the remote control display, it is possible that the remote control was connected while the main power was still turned on.
  If such is the case, carry out the following.
- Set DIP switch (DSW1) No. 1 to 4 the ON position, and then turn on the main power. If the display appears after about 30 seconds, turn DIP switches 1 to 4 to OFF position.

6. SELF-DIAGNOSIS FUNCTION

The LED1 (green) indicators on the indoor unit and outdoor unit printed circuit boards illuminate to indicate that the printed circuit boards are operating normally. If the LEDS are switched off or are flashing irregularly, check the power supply, and turn it off and then back on again.

If "CHECK" is flashing on the timer

- If the "CHECK" display on the wired remote control is flashing, the details of the problem(s) are displayed on the timer display screen each time the CHECK switch is pressed.
- Further details of the problem can be displayed by pressing the **SELECT** switch while the general problem details are being displayed.

Example of current problem display

Press the CHECK switch. → Continue pressing the SELECT switch while the problem details are being display.

	TIMER	FAN SPEED	OPE-RATION	TEMP		TIMER	FAN SPEED	OPE-RATION	TEMP
Problem display →	CHECK F 26			A/C No. 01	Detail display →	CHECK – 01			A/C No. 01

If "CHECK" is not flashing on the timer

- If the "CHECK" display on the wired remote control is not flashing, press the CHECK switch continuously for 5 seconds or more to display the problem details for the last problem or the problem before that.
- You can then switch between the display for the previous problem and the problem before that by pressing the timer ▲ or ▼ switches.
- Press the CHECK switch once more to return to the normal display.

Example of previous problem display

Press the CHECK switch for 5 seconds or more. → Continue pressing the SELECT switch while the problem details are being display.

	TIMER	FAN SPEED	OPE-RATION	TEMP		TIMER	FAN SPEED	OPE-RATION	TEMP
Problem display →	CHECK 1 F 26			A/C No. 01	Detail display →	CHECK 1 – 01			A/C No. 01

Example of abnormality display before previous display

While the previous display still appears, press the ▲ switch. → Continue pressing the SELECT switch while the problem details are being display.

	TIMER	FAN SPEED	OPE-RATION	TEMP		TIMER	FAN SPEED	OPE-RATION	TEMP
Problem display →	CHECK 2 F 26			A/C No. C1	Detail display →	CHECK 2 – 01			A/C No. 01

- The display can be switched between the previous problem and the one before that by pressing ▲ and ▼ switches.
- After eliminating the cause of the problem, press the CHECK switch once more to return to the normal display.
- If the problem disappears and operation returns to normal, CHECK display on the remote control will switch off, but the self-diagnosis LED will remain illuminated until operation is resumed.

28. INSTALLATION (OUTDOOR UNIT)

AIR CONDITIONERS OUTDOOR UNIT INSTALLATION INSTRUCTIONS

REFRIGERANT
R22

HP	Panasonic Model		National Model	
2.5 HP	CU-A24BBP5	CU-C24BBP5	CU-C24BBN5	CU-C24BBN6
3 HP	CU-A28BBP5 CU-A28BBP8	CU-C28BBP5 CU-C28BBP6 CU-C28BBP8	CU-C28BBN5 CU-C28BBN6 CU-C28BBN8	
4 HP	CU-A34BBP5 CU-A34BBP8	CU-C34BBP5 CU-C34BBP7 CU-C34BBP8	CU-C34BBN7 CU-C34BBN8	
5 HP	CU-A43BBP8	CU-C43BBP7 CU-C43BBP8	CU-C43BBN7 CU-C43BBN8	
6 HP	CU-A50BBP8	CU-C50BBP7 CU-C50BBP8	CU-C50BBN7 CU-C50BBN8	

Precautions in terms of safety

Carry out installation work with reliability after thorough reading of this "Precaution in terms of safety".

- Precautions shown here are differentiated between ⚠Warnings and ⚠Cautions. Those that have much chances for leading to significant result such as fatality or serious injury if wrong installation would have been carried out are listed compiling them especially into the column of ⚠Warnings.

  However, even in the case of items which are listed in the column of ⚠Cautions, such items also have a chance for leading to significant result depending on the situations.
  In either case, important descriptions regarding the safety are listed, then observe them without fail.
- As to indications with illustration

  ⚠ This mark means "Caution" or "Warning". ⚠ This mark means "Earth".
- After installation work has been completed, do not only make sure that the unit is free from any abnormal condition through the execution of try run but also explain how to use and how to perform maintenance of this unit to the customer according to the instruction manual.
  In addition, request the customer to keep this manual for installation work together with instruction manual.

⚠ Warnings

▲ The appliance must be installed by technician, who takes into account the requirements given by ISO5149 or eventual equivalent requirements.

▲ As to installation, request the distributor or vendor to perform it. Imperfection in installation caused by that having been carried out by the customer himself may lead to water leakage, electric shock, fire, etc.

▲ Carry out the installation work with reliability according to this manual for installation work.
Imperfection in installation leads to water leakage, electric shock, fire, etc.

▲ Carry out the installation work with reliability on the place that can bear the weight of this unit sufficiently. Insufficient strength leads to injury due to falling of the unit.

▲ Carry out predetermined installation work in preparation for strong wind such as typhoon, earthquake. Imperfection in installation work may lead to accidents arisen from overturn, etc.

▲ The unit must be installed in accordance with applicable national and local regulations.
Any electrical work should only be carried out by qualified technician and use exclusive circuits without fail.
Presence of insufficient capacity in power circuit or imperfection in execution leads to electric shock, fire, etc.

▲ Wiring shall be connected securely using specified cables and fix them securely so that external force of the cables may not transfer to the terminal connection section.
Imperfect connection and fixing leads to fire, etc.

▲ If installing inside a small room, measures should be taken to prevent refrigerant levels from building up to critical concentrations in the event of a refrigerant leak occurring. Please discuss with the place of purchase for advice on what measures may be necessary to prevent critical concentrations being exceeded. If the refrigerant leaks and reaches critical concentration levels, there is the danger that death from suffocation may result.

▲ Securely attach the protective covers for the outdoor unit connection cables and power cord so that they do not lift up after installation. If the covers are not properly attached and installed, the terminal connections may overheat, and fire or electric shock may result.

▲ Switch off all supplies before accessing any electrical part.

▲ If refrigerant gas escapes during installation, ventilate the affected area. If the refrigerant gas comes into contact with sparks or naked flames, it will cause toxic gases to be generated.

▲ Once installation work is completed, check that there are no refrigerant gas in the room that can come into contact with sparks or flames from a fan heater, stove or kitchen range, which will cause toxic gases to be generated.

▲ When performing piping work do not mix air except for specified refrigerant (R22) in refrigeration cycle. It causes capacity down, and risk of explosion and injury due to high tension inside the refrigerant cycle.

⚠ Cautions

▲ Carry out Earthing work.
Do not connect the Earth return to the gas pipe, water line pipe, lightning rod and telephone lines.
Imperfection in Earth return may lead to electric shock.

▲ Do not install the unit at the place where the possibility of inflammable gas leakage exists. If such gas leakages should arise and the gas builds up around the unit, such situation may lead to ignition.

▲ Mounting of the earth leakage circuit breaker is required. Omission in mounting of the earth leakage circuit breaker may lead to electric shock.

▲ Drain piping should be made to ensure secure drainage according to the manual for installation work and carry out the thermal insulation to prevent the occurrence of condensation.
Imperfection in piping work leads to water leakage and may cause the house and property, etc. to become wet.

▲ Position the indoor unit and outdoor unit, power cords and indoor/outdoor unit connection cables in a way so that they are at least 1 metre away from televisions and radios.
This is to avoid problems such as interference with picture and/or sound. (However, note that depending on the electromagnetic wave conditions, interference may still occur even if the separation distance is more than 1 metre.)

1. ACCESSORIES SUPPLIED WITH OUTDOOR UNIT

● The following parts are supplied as accessories with each outdoor unit.
Check that all accessory parts are present before installing the outdoor unit.

Part name	Q'ty	Diagram	Application
Protective bushing	2		For protecting electrical wires
Banding strap	3		For tying electrical wires together

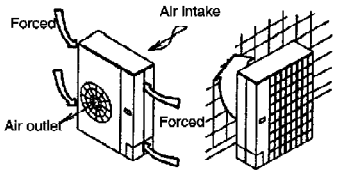
Heat pump-types only

Part name	Q'ty	Diagram	Application
Drain elbow AS	1		For connecting the drain pipe (with ring seat)

2. SELECTING THE OUTDOOR UNIT INSTALLATION LOCATIONS

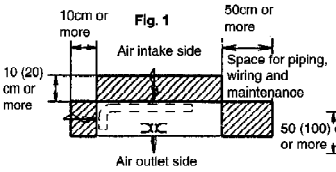
● Select location which satisfies the following condition, and then confirm with the customer that such a place is satisfactory before installing the outdoor unit.

1. There should be sufficient ventilation.
2. The outdoor unit should be sheltered as much as possible from rain and direct sunlight, and the air should be able to move around so that hot and cold air do not build up.
3. There should not be animals or plants near the air outlet which could be adversely affected by hot or cold air coming out from the unit.
4. The outlet air and operating noise should not be a nuisance to other occupants nearby.
5. The location should be able to withstand the full weight and vibration of the outdoor unit, and it should also be level and safe for the unit to be installed.
6. The intake and outlet should not be covered.
7. There should not be danger of flammable gas or corrosive gas leaks.
8. There should be as little back-ventilation (air blowing directly onto the fan) as possible.
(If strong wind blows directly onto the fan, it may cause problems with normal operation.)
   - If you know which direction the prevailing wind comes from during the operating season, set the outdoor unit at a right-angle to this wind direction, or so that the air outlet faces toward a wall or fence.
   - If there are obstructions near the outdoor unit and the wind direction is not constant, install an optional air guider.
9. Do not allow any obstacles near the outdoor unit which will interfere with air flow around the air intake and air outlet.
10. If installing in a location which is prone to snowfall, place the installation base as high as possible, and be sure to install a roof or enclosure which does not allow snow to accumulate.
11. Avoid installing the unit in places where petroleum products (such as machine oil), salinity, sulphurous, gases or high-frequency noise are present.
12. Be sure to leave enough space around the outdoor unit to maintain proper performance and to allow access for routine maintenance.
    - Allow enough space from any obstacles as shown in Fig.1.2 below in order to prevent short-circuits from occurring. (If installing more than one outdoor unit, make the necessary space available as outlined in 14.)
    However, there should be at least 1 metre of free space above the unit.
    - The height of any obstacles at the air intake and outlet sides should not be greater than the height of the outdoor unit.



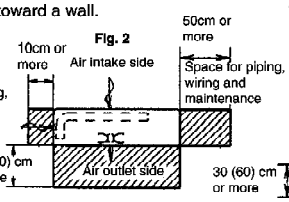
• When facing the air intake side toward a wall.

Fig. 1



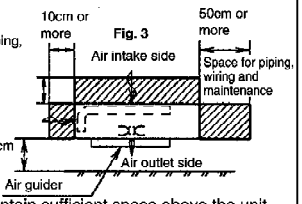
• When facing the air outlet side toward a wall.

Fig. 2



• When using an optional air guider for outdoor units.

Fig. 3



✻ Maintain sufficient space above the unit.

13. If is not possible to leave 50 (100)cm at the air outlet side as shown in Fig.2, the installation method shown in Fig.3 can be used if an optional air guider for outdoor units is installed. Install according to the instructions given in the separate instruction manual.

(NOTE) When installing the air guider

1) If directing the air upward, there should not be obstacles above the outdoor unit.
2) If directing the air to the left or right, there should not be obstacles at the left or right of the outdoor unit.
3) Never use the air guider in locations which are subject to snowfall.
   If snow gets inside the air guider, it could cause the fan to freeze up.
4) If connecting outdoor units in series, direct the flow upward.

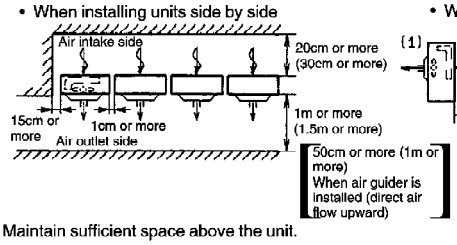
Air guider for outdoor units

Model Name		Part No.
CU-A24BBP5	CU-C24BBP5	CZ-UFS01P
CU-A28BBP5	CU-C28BBP6	
CU-A28BBP8	CU-C28BBP8	
CU-C28BBP5		
CU-C24BBN5	CU-C24BBN6	CZ-UFS01N
CU-C28BBN5	CU-C28BBN6	
CU-C28BBN8		

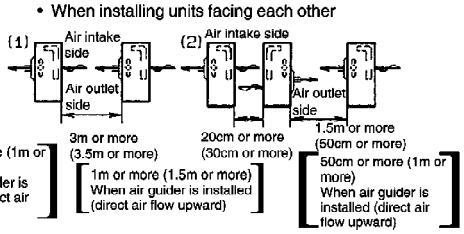
Model Name		Part No.
CU-A34BBP5	CU-A34BBP8	CZ-UFD01P
CU-C34BBP7	CU-C34BBP8	
CU-C34BBP5		
CU-A43BBP8	CU-C43BBP7	
CU-C43BBP8		
CU-A50BBP8	CU-C50BBP7	
CU-C50BBP8		
CU-C34BBN7	CU-C34BBN8	CZ-UFD01N
CU-C43BBN7	CU-C43BBN8	
CU-C50BBN7	CU-C50BBN8	

14. If installing more than one outdoor unit, allow enough space around each unit as shown below.

• When installing units side by side


Air intake side
20cm or more (30cm or more)
1m or more (1.5m or more)
15cm or more
1cm or more
Air outlet side
50cm or more (1m or more)
When air guider is installed (direct air flow upward)

• When installing units facing each other


(1)
Air intake side
Air outlet side
3m or more (3.5m or more)
1m or more (1.5m or more)
When air guider is installed (direct air flow upward)
(2)
Air intake side
Air outlet side
20cm or more (30cm or more)
1.5m or more (50cm or more)
50cm or more (1m or more)
When air guider is installed (direct air flow upward)

✻ Maintain sufficient space above the unit.

Values inside brackets indicate distances when installing the 4HP-6HP.

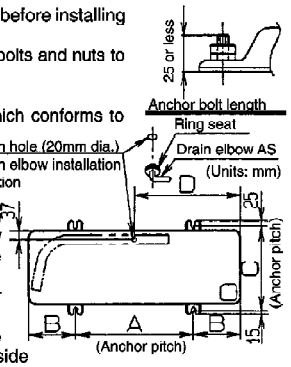
- The distance given above are the minimum distance required in order to maintain proper performance. Allow as much space as possible in order to get the best performance from the units.

3. TRANSPORTING AND INSTALLING THE OUTDOOR UNIT

- Transporting
  1. The outdoor unit should be transported in its original packaging as close to the installation location as possible.
  2. If suspending the outdoor unit, use a rope or belt, and use cloth or wood as padding in order to avoid damaging the unit.
  3. Use the handles at left and right to transport the unit, and be careful not to touch your hands or other objects against the fan.

- Installation
  1. Read the "Selecting the outdoor unit installation location" section thoroughly before installing the outdoor unit.
  2. If installing the unit to a concrete base or other solid base, use M10 or W3/8 bolts and nuts to secure the unit, and ensure that the unit is fully upright and level.
     (The anchor bolt positions are shown in the diagram at the right side.)
     In particular, install the unit at a distance from the neighbouring building which conforms to regulations specified by local noise emission regulation standards.
  3. Do not install the outdoor unit to the building's roof.
  4. If there is a possibility that vibration may be transmitted to the rooms of the building, place rubber insulation between the unit and the installation surface.
  5. Drain water will be discharged from the outdoor unit when operating the system in heating or defrosting modes. Select an installation location which will allow the water to drain away properly, or provide a drainage channel so that the water can drain away.
     (If this is not done, the drain water may freeze during winter, or the water may spill down to areas underneath the installation location.)
- If a drain pipe needs to be installed, insert the accesory drain elbow into the mounting hole at the bottom of the outdoor unit, and connect a hose with an inside diameter of 15mm to this drain elbow.
  (The hose is not supplied.)

✳ If using the drain elbow, install the outdoor unit on a base which is at least 5cm high.



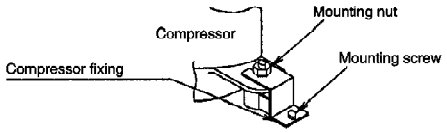
Anchor bolt position

Model Name	Amm	Bmm	Cmm	Dmm
CU-A24BBP5 CU-C24BBP5 CU-A28BBP5 CU-C28BBP6 CU-A28BBP8 CU-C28BBP8 CU-C28BBP5 CU-C24BBN5 CU-C24BBN6 CU-C28BBN5 CU-C28BBN6 CU-C28BBN8 CU-A34BBP5 CU-A34BBP8 CU-C34BBP7 CU-C34BBP5 CU-C34BBP8 CU-C34BBN7 CU-C34BBN8	500	200	360	450
CU-A43BBP8 CU-C43BBP7 CU-C43BBP8 CU-C43BBN7 CU-C43BBN8 CU-A50BBP8 CU-C50BBP7 CU-C50BBP8 CU-C50BBN7 CU-C50BBN8	700	200	360	720

NOTE In cold regions (where the outdoor air temperature can drop to 0°C or below continuously for 2-3 days), the drain water may freeze, and this may prevent the fan from operating. Do not use the drain elbow in such cases.

CAUTION

- Be sure to remove the compressor fixing brackets.
  (Some models are not equipped with compressor fixing brackets.)
- To remove, first remove the mounting screws, loosen the compressor mounting nuts and then pull sideways.
- After removing, be sure to tighten the compressor mounting nuts again.



4. CONNECTING THE PIPES

✳ This product is used new refrigeration (R407C).

- Use a clean pipe which does not include water or dust for inside of piping.
- When cutting the refrigerant pipes, a piping cutter must be used. Before connecting the refrigerant pipes blow nitrogen and blow off dust in the pipes.
  (Never use tools which cause a lot of dust such as a saw and a magnet.)
- When waxing replace nitrogen inside the piping after removing dirt and dust. (In order to prevent oxidization scale from forming inside the piping).
- The refrigerant pipes are of particular importance.
  The installation work for refrigerant cycles in separate-type air conditioners must be carried out perfectly.

Model Name	Pipe diameter (mm)		Equivalent length (m)	Difference of elevation (m)
	Liquid-side pipes	Gas-side pipes		
CU-A24BBP5 CU-C24BBP5 CU-C24BBN5 CU-C24BBN6	ø6.35	ø15.88	50	30
CU-A28BBP5 CU-A28BBP8 CU-C28BBP8 CU-C28BBP5 CU-C28BBP6 CU-C28BBN5 CU-C28BBN6 CU-C28BBN8	ø9.52	ø15.88	50	30
CU-A34BBP5 CU-A34BBP8 CU-C34BBP7 CU-C34BBP5 CU-C34BBP8 CU-C34BBN7 CU-C34BBN8 CU-A43BBP8 CU-C43BBP7 CU-C43BBP8 CU-C43BBN7 CU-C43BBN8 CU-A50BBP8 CU-C50BBP7 CU-C50BBP8 CU-C50BBN7 CU-C50BBN8	ø9.52	ø19.05	50	30

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ENTITY SYSTEM "odinst_5.tif"

CAUTION Do not short-circuit the low pressure switch.

Procedure	Notes
1. Confirm the valve on the liquid side and the gas side is surely open.	
2. Press the COOL switch on outdoor printed board for 1 second or more.	Perform the cooling operation for five minutes or more.
3. Shut the valve on the liquid side surely.	When the valve is shut halfway the compressor is occasionally damaged.
4. The low pressure switch operates, the unit stops, and then shut the valve on the gas side immediately.	

The pump down is completed above.

CHECKING THE PRESSURE

Check the pressure at the service port on the valve and the check joint where the pipe ends have been joined according to the table at below.

Heat pump model

	A	B
During cooling operation	High pressure	Low pressure
During heating operation	Low pressure	High pressure

Cooling model only

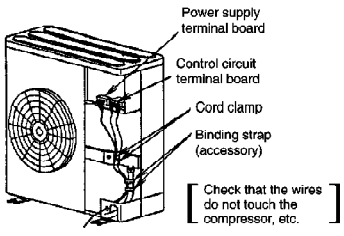
	C	B
During cooling operation	High pressure	Low pressure

7. ELECTRICAL WIRING

⚠ Warning	The units must be connected to the supply cables for fixed wiring by qualified technician. Feed the power source to the unit via a distribution switch board designed for this purpose, the switch should disconnected all poles with a contact separation of at least 3mm. When the supply cable is damaged, it must be replaced by qualified technician.
⚠ Caution	Be sure to install a current leakage breaker, main switch and fuse to the main power supply, otherwise electric shocks may result.
⚠ Caution	Be sure to connect the unit to secure earth connection. ⏚ If the earthing work is not carried out properly, electric shocks may result.
⚠ Warning	Wiring shall be connected securely by using specified cables and fix them securely so that external force of the cables may not transfer to the terminal connection section. Imperfect connection and fixing leads to fire, etc.

- Connect the power supply wiring and indoor/outdoor unit connection wiring according to the electrical circuit diagram instructions.
- Clamp the wires securely to the terminal connections using cord clamps so that no undue force is placed on the wires.
- Once all wiring work has been completed, tie the wires and cords together with the binding strap so that they do not touch other parts such as the compressor and pipes.

1. Connect the power supply line to a 3-phase/380-415V (or single-phase 220-240V) power supply.
   If the phase is reversed, the self-diagnosis function will be activated and the unit will not operate. In such cases, switch over any two of the power supply wires (L1,L2,L3) (3-phase models only).
   (Never operate the unit by pressing the electromagnetic switch.)
2. The equipment shall be connected to a suitable mains network with a main impedance less than the valve indicated in the table of power supply specifications.
3. Be sure to connect the wires correctly to terminal board with connecting the crimp type ring terminal to the wires.
4. The binding screws inside the power supply box may become loosened due to vibration during transportation, so check that they are tightened securely.


Power supply terminal board
Control circuit terminal board
Cord clamp
Binding strap (accessory)
Check that the wires do not touch the compressor, etc.

5. Tighten the binding screws to the specified torque while referring to the table below.
6. If connecting two separate wires to a single crimped terminal, place the two crimped terminal wires together as shown in Fig. A. (If the arrangement shown in Fig. B is used, poor contacts or contact damage may result.)
7. If momentarily turning on the power supply for both the indoor and outdoor units, do not turn the power off again until at least 1 minute has passed (except when a reversed phase has been detected).

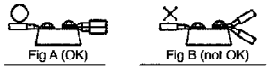


Fig A (OK)

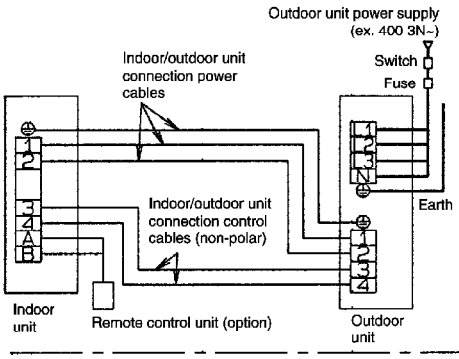
Fig B (not OK)

⚠ Warning	Use only the specified cables for wiring connections. Connect the cable securely, and secure them properly so that no undue force will be applied to the terminal connections. If the terminals are loose or if the wires are not connected securely, fire may result.

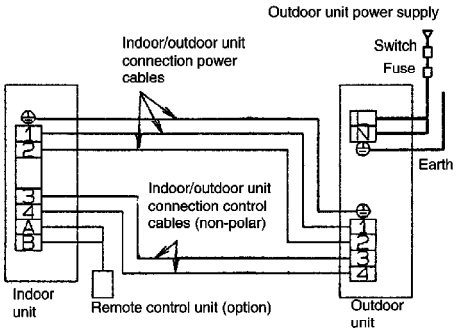
Terminal screw	Tightening torque N•cm {kgf•cm}
M3	69~98 {7~10}
M4	157~196 {16~20}
M5	196~245 {20~25}

Refer to the following diagrams for details on how to connect the power supply cables and indoor/outdoor unit connection cables.

OUTDOOR UNIT/3-PHASE MODEL



OUTDOOR UNIT/SINGLE-PHASE MODEL



- Power supply specifications

Model name		Leakage current breaker (A)	Circuit breaker (Minimum Capacity) Switch (A)	Circuit breaker (Minimum Capacity) Fuse (A)	Minimum power supply cables	4mm² cable based on length (m)	Indoor/outdoor unit connection power cables (terminals ① ② ⏚)	Indoor/outdoor unit connection power cables (terminals ① ②)	Maximum permissible impedance (Ω)
CU-A24BBP5 CU-C24BBP5 CU-C28BBN5	220V-240V~	30	30	30	4mm²	15	2.5mm² x 3	1.0mm² x 2	0.1
CU-C24BBN6	220V~	30	30	30		12			—
CU-A28BBP5 CU-C28BBP5 CU-C28BBN5	220V-240V~	30	30	30		14			0.1
CU-C28BBP6 CU-C28BBN6	220V 3~	30	30	30		11			—
CU-A28BBP8 CU-C28BBP8 CU-C28BBN8	380V-415V 3N~	15	15	15		46			0.05
CU-A34BBP5 CU-C34BBP5	220V-240V~	40	40	40		10			0.05
CU-C34BBP7 CU-C34BBN7	220V 3~	30	30	30		17			—
CU-A34BBP8 CU-C34BBP8 CU-C34BBN8	380V-415V 3N~	20	20	20		36			0.04
CU-C43BBP7 CU-C43BBN7	220V 3~	40	40	40		13			—
CU-A43BBP8 CU-C43BBP8 CU-C43BBN8	380V-415V 3N~	20	20	20		28			0.03
CU-C50BBP7 CU-C50BBN7	220V 3~	50	50	50		11			—
CU-A50BBP8 CU-C50BBP8 CU-C50BBN8	380V-415V 3N~	20	20	20		24			0.02

NOTE

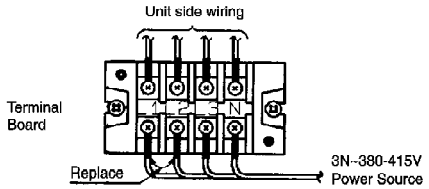
⊘ 1. Where ground work (earth) is carried out, do not connect the ground return to the gas pipe, water line pipe, grounded circuit of the telephone and lightning rod, or ground circuit of other product in which earth leakage breaker is incorporated. (Such action is prohibited by statute, etc.)

⚠ 2. In order to prevent malfunction (noise generation) of the equipment, carry out the wiring of the control cable for indoor and outdoor units (signal cable) isolating it from other power cable with separate cable.

3. Use the standard power supply cables for Europe (such as H05RN-F or H07RN-F which conforms to CENELEC (HAR) rating specifications) or use the cables based on IEC standard. (245IEC57, 245IEC66)
4. Select the particular size of electrical wire for power supply cables in accordance with the standards of the given nation and region.

CONNECTING POWER SUPPLY CABLES

- If reversed phase is detected and the self-diagnosis function is activated after connecting the power supply cables, carry out the following operation.
  Switch over any two of the power supply wires which are connected to the power supply terminal board.
  Turn off the main power supply before correcting the phase.



CAUTION

- Never operate the unit by pressing the electromagnetic switch.
- Never correct the phase by switching over any of the wires inside the unit.

NOTE When installing in Australia

As next enumeration unit is a single phase connection with a starting current greater than 45amps, it will be necessary to fit a starting device that lowers the starting current to no more than 45amps if it causes interference to electricity supply.

Single phase connection with greater than 45 amps unit

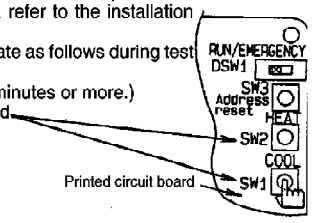
CU-A24BBP5 CU-C24BBP5 CU-A28BBP5 CU-C28BBP5 CU-A34BBP5 CU-C34BBP5

9. PRECAUTIONS WITH REGARD TO TEST OPERATION

CAUTION

- Always be sure to use a properly-insulated tool to operate the switch on the circuit board. (Do not use your finger or a metallic object.)
- Never turn on the power supply until all installation work has been completed.
- Turn on the circuitbreaker 12 hours or more before a test run. (By supplying power to crankcase heater, compressor is warmed and liquid compressing is prevented.)
- For three-phase models, check that the phase is not reversed.
  (If the phase is reversed, the LED on the printed circuit board will flash.)
- Check that the voltage is 90% of rated voltage or higher when starting the unit.
  (The unit will not operate if the voltage is less than 90% of rated voltage.)
- Test operation can be carried out using the remote control unit or by using the switch on the printed circuit board inside the outdoor unit.
  If carrying out test operation at the printed circuit board of the outdoor unit, follow the procedure given below. (If using the remote control unit to carry out test operation, refer to the installation manual which is supplied with the indoor unit.)
- Press the COOL or HEAT switch for 1 second or more. The LEDs will operate as follows during test operation.
  (Be sure to select cooling mode first, and run the units in this mode for 5 minutes or more.)

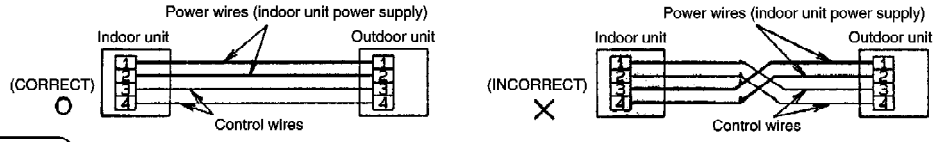
※ The compressor will stop momentarily when the operation mode is changed.



Test operation mode	LEDs on printed circuit board
Cooling test mode	LEDs 2-4 flash, LEDs 5-8 switch off
Heating test mode	LEDs 2-5 switch off, LEDs 6-8 flash

- Press the TEST button once more to cancel test operation mode.
- When performing heating test operation when the outside temperature is high, or cooling test operation when the outside temperature is low, the protection circuits may sometimes operate within a few minutes.

NOTE 1 These units are equipped with connection error prevention circuits. If the units do not operate, it is possible that the connection error prevention circuits have been operated. In such cases, check that the drive wires (connected to terminals ① and ②) and the control wires (connected to terminals ③ and ④) are connected correctly. If they are connected incorrectly, connect them correctly. Normal operation should then commence.



NOTE 2 Do not short the remote control unit wires to each other. (The protection circuit will be activated and the units will not operate.) Once the cause of the short is eliminated, normal operation will then be possible.

NOTE 3 When running the units in heating mode during test operation, be sure to run the units in cooling mode first before selecting this mode. If heating mode is selected first, it may cause problems with operation of the compressor.

NOTE 4 Test operation should be carried out for a minimum of 5 minutes. (Test operation will be cancelled automatically after 30 minutes.)

NOTE 5 Test operation mode should always be cancelled once test operation itself has been completed.

NOTE 6 Emergency operation can be carried out by setting the DSW1 switch on the printed circuit board inside the outdoor unit to the EMERGENCY position. During emergency operation, any abnormalities detected by the temperature thermistors are ignored while the outdoor unit is operating, so that long-term operation in this mode should be avoided. After emergency mode operation has been completed and normal operation is to be resumed, turn the power supplies for the indoor and outdoor units off and then back on again.

- Set the abnormal temperature thermistor only to the setting in the table below when carrying out emergency operation.

	Thermistor	Cooling operation	Heating operation
Indoor unit side	Room temperature detection	Fixed at 25°C	
	Pipe temperature detection	Shorted	Open
Outdoor unit side	Discharge thermistor detection	Open	Open
	Heat exchanger outlet temperature detection	Shorted	Open

※ Refer to the electrical circuit diagrams for details on wiring for each thermistor.

NOTE 7 If the self-diagnosis function reports a problem but more than one problem has developed at the indoor and/or outdoor units, the problem display on the remote control unit may not match the LED display on the outdoor unit printed circuit board. In such cases, check both locations and remove the causes of the problems.

10. AS TO MAKING THE INSPECTION AFTER COMPLETION OF WORK FULLY UNDERSTOOD

- At the time when the work has been completed, measure and record the characteristics of test run without fail and keep the measuring date, etc.
- Carry out the measurement regarding room temperature outside air temperature, suction and air discharge temperatures, wind velocity, wind volume, voltage current, presence of abnormal vibration, operating pressure, piping temperature, compressive pressure, airtight pressure as items to be measured.
- As to the structure and appearance, check following items.
  - ❑ Short circuit of the blowout air.
  - ❑ Smooth flow of the drain
  - ❑ Reliable thermal insulation
  - ❑ Leakage of refrigerant
  - ❑ Mistake in wiring
  - ❑ Reliable connection of the grand wire
  - ❑ Looseness in terminal screw, fastening torque
    M3… 69-98•cm{7-10kgf•cm} M4…157-196N•cm{16-20kgf•cm}
    M5…196-245N•cm{20-25kgf•cm}

11. AS TO DELIVERY TO THE CUSTOMER

- Request the customer to operate this air conditioner viewing instruction manual come with indoor unit in practice and explain how to operate.
- Deliver the instruction manual to the customer without fail.

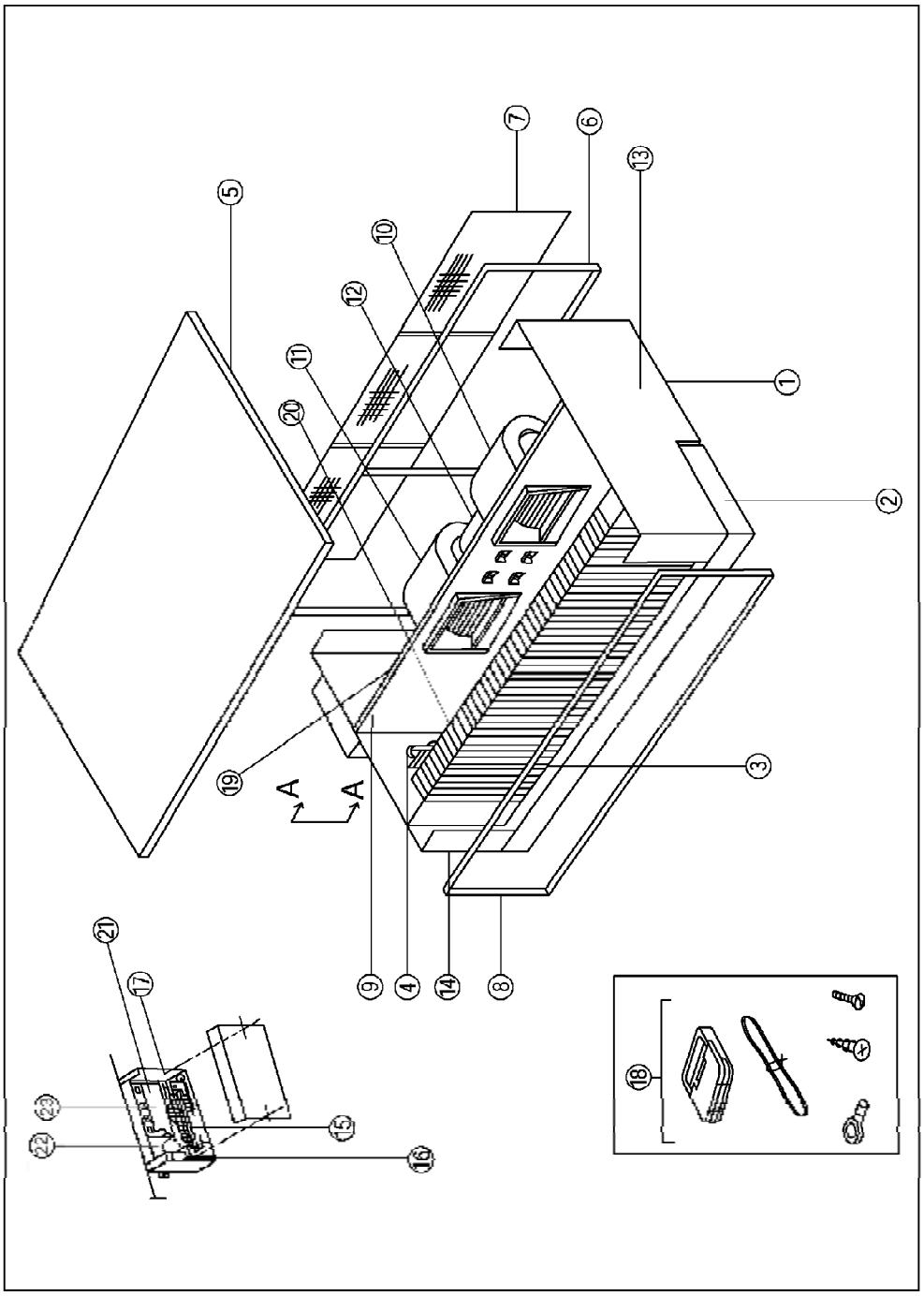
12. AS TO PARTS TO BE SOLD SEPARATELY

We are preparing air guider for outdoor unit and parts to be sold separately for indoor unit, etc., however, as to details of mounting method, etc., observe respective instruction manual.

29. REPLACEMENT PARTS

29.1. INDOOR UNIT

CS-A24BD3P, CS-A28BD3P

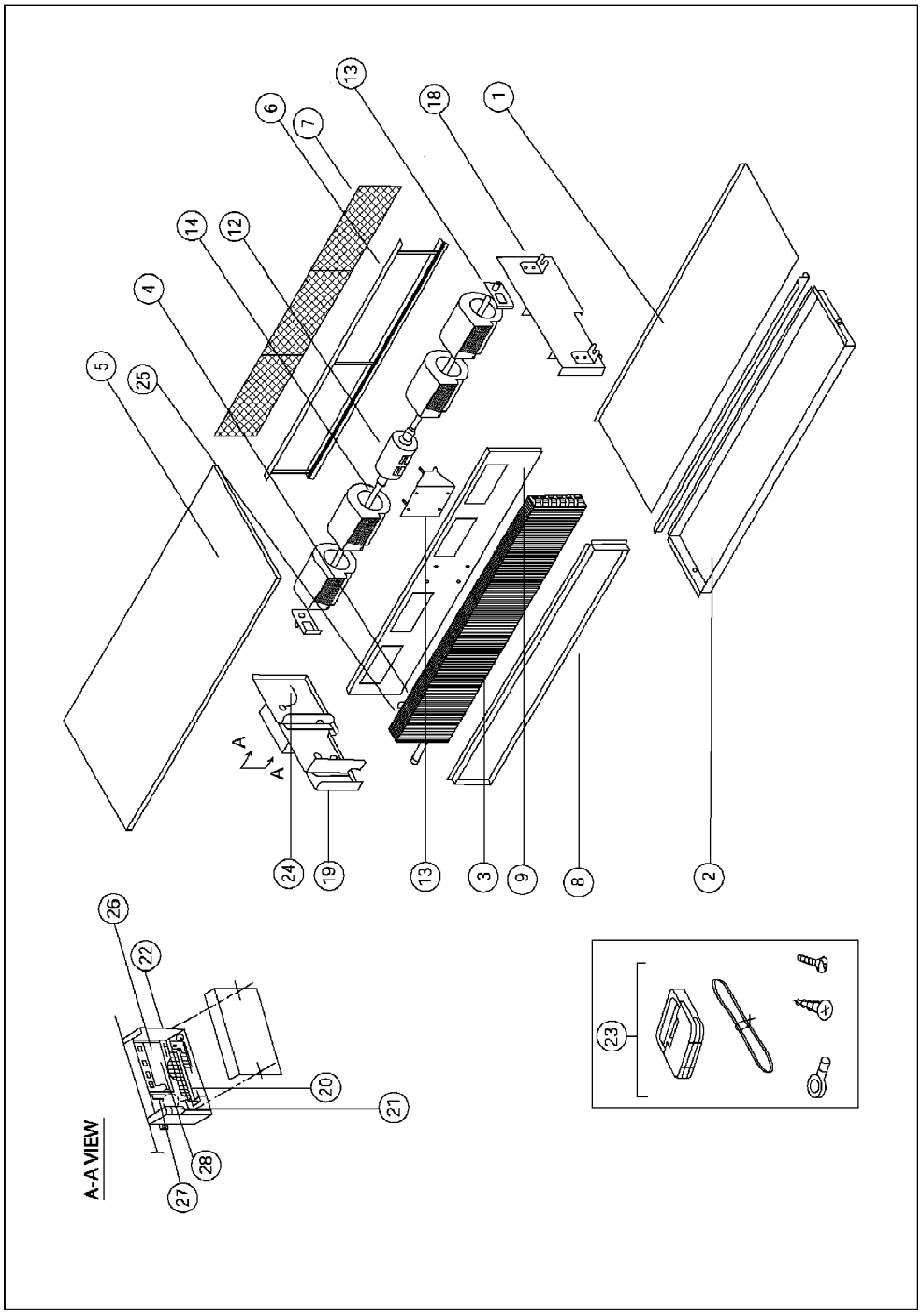


CS-A24BD3P, CS-A28BD3P

REF. NO.	PARTS NAME	PARTS NUMBER	QUANTITY PER 1 UNIT	
			CS-A24BD3P	CS-A28BD3P
1	Cabinet (Bottom)	P02-T05840	1	1
2	Drain pan	P42-T02760	1	1
3	Evaporator	P45-T05100	1	1
4	Distributor ass'y.	P45-T04510	----	1
		P45-T04670	1	----
5	Cabinet (Top)	P42-T02730	1	1
6	Filter guide ass'y.	P42-T02790	1	1
7	Filter	P42-T02770	1	1
8	Duct flange ass'y. (Outlet)	P03-T01370	1	1
9	Fan base ass'y.	P45-T05080	1	1
10	Casing R ass'y.	P45-T06760	1	1
11	Casing L ass'y.	P45-T06770	1	1
12	Fan motor	P06-T03481	----	1
		P06-T03491	1	----
13	Panel side R ass'y.	P42-T02750	1	1
14	Panel side L ass'y.	P42-T02960	1	1
15	Terminal board	P06-T04680	1	1
16	Capacitor	P06-T04630	----	----
		P06-T04640	1	1
17	Transformer	P06-T04300	1	1
18	Remote control (P)	A75C2240	1	1
19	Thermistor ass'y.	06-854510	1	1
20	Coil sensor	06-853760	1	1
21	PCB assembly	A53D0003A	1	1
22	Noise filter	A491018	1	1
		(P46-T06120)	1	1
23	PCB fuse (250V T3.15A)	----	1	1

All parts are supplied from Taiwan (Tamaco).

CS-A34BD3P, CS-A43BD3P, CS-A50BD3P



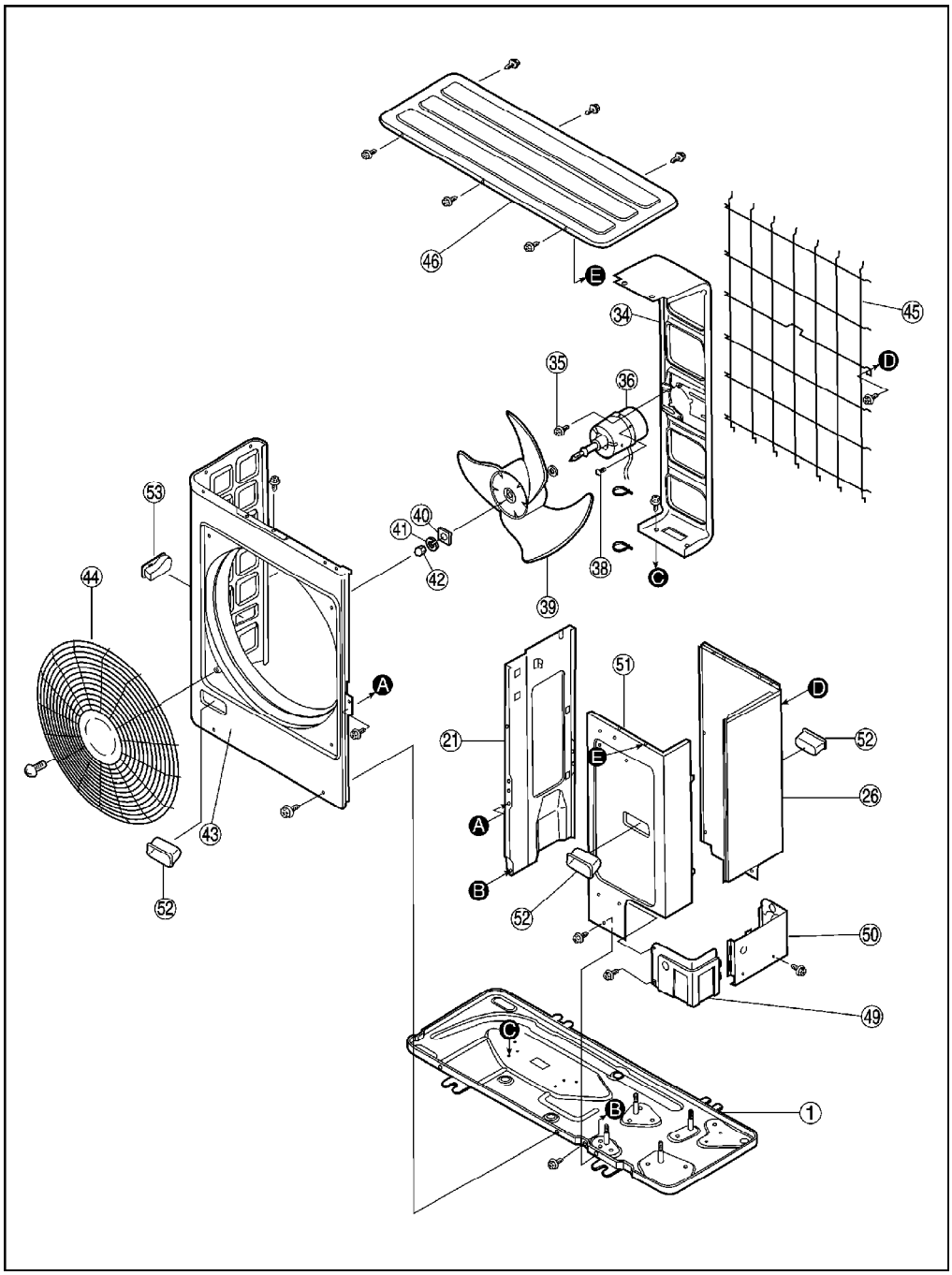
CS-A34BD3P, CS-A43BD3P, CS-A50BD3P

REF. NO.	PARTS NAME	PARTS NUMBER	QUANTITY PER UNIT		
			CS-A34BD3P	CS-A43BD3P	CS-A50BD3I
1	Cabinet (Bottom)	P02-T06560	1	1	1
2	Drain pan	P42-T02860	1	1	1
3	Evaporator	P45-T05340	1	----	----
		P45-T05350	----	1	1
4	Distributor ass'y.	P45-T05300	1	----	----
		P45-T05390	----	----	1
		P45-T07040	----	1	----
5	Cabinet (Top)	P42-T02830	1	1	1
6	Filter guide ass'y.	P42-T02840	1	1	1
7	Filter	P42-T02850	1	1	1
8	Duct flange ass'y. (Outlet)	P03-T01380	1	1	1
9	Fan base ass'y.	P45-T05320	1	----	----
		P45-T05330	----	1	1
12	Fan motor	P06-T03520	1	----	----
		P06-T03530	----	1	1
13	Stay fan motor	P06-T03780	1	1	1
14	Shaft	P05-T12620	1	----	----
		P05-T12630	----	2	2
18	Panel side R ass'y.	P42-T02750	1	1	1
19	Panel side L ass'y.	P42-T02960	1	1	1
20	Terminal board	P06-T04680	1	1	1
21	Capacitor	P06-T04640	1	1	----
		P06-T04650	----	----	1
22	Transformer	P06-T04300	1	1	1
23	Remote control	A75C2240	1	1	1
24	Thermistor ass'y.	06-854510	1	1	1
25	Coil sensor	06-853760	1	1	1
26	PCB assembly	A53D0003A	1	1	1
27	Noise filter	A491018 (P46-T06120)	1	1	1
28	PCB fuse (250V T3.15A)	----	1	1	1

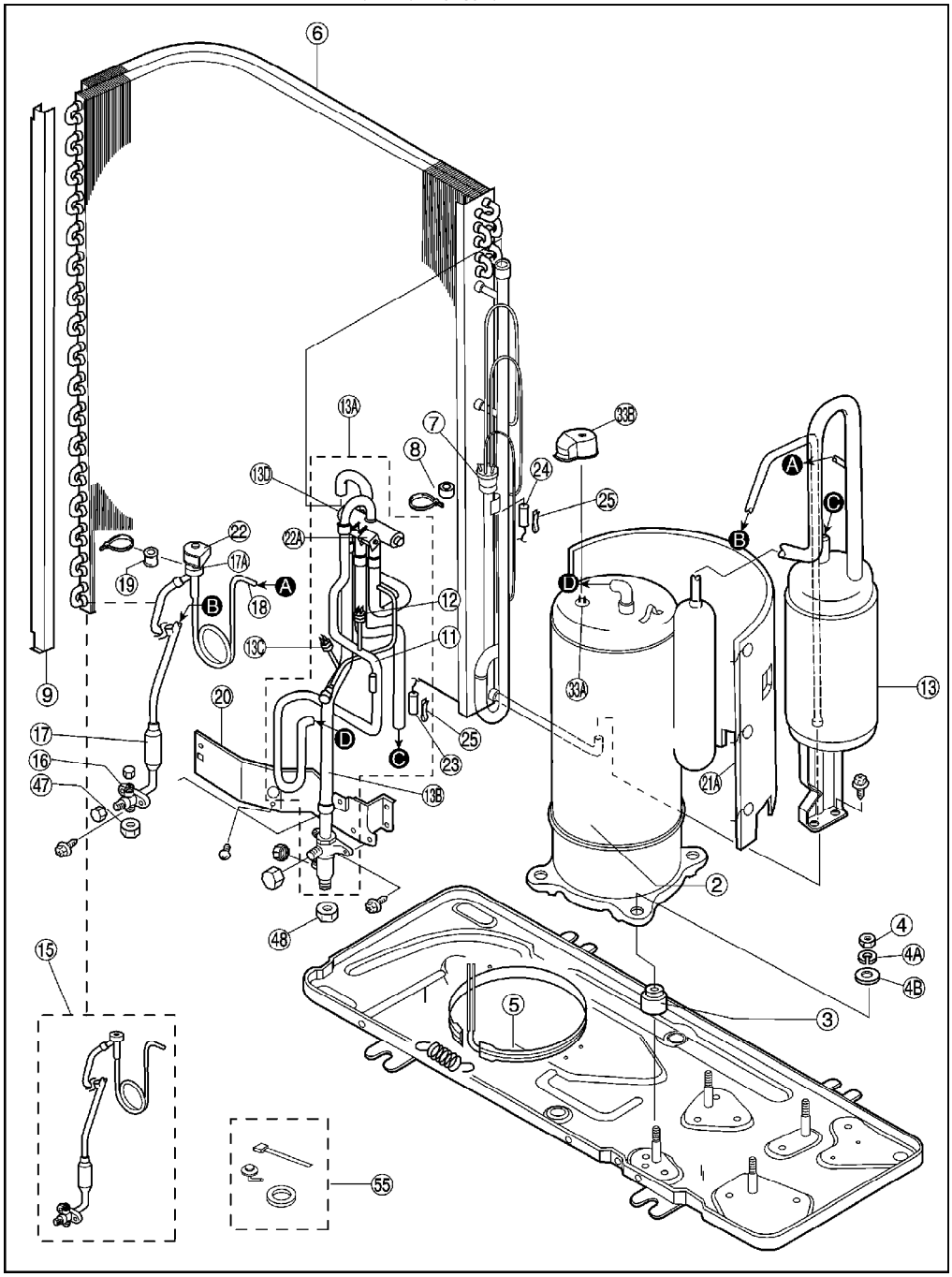
All parts are supplied from Taiwan (Tamaco).

29.2. OUTDOOR UNIT

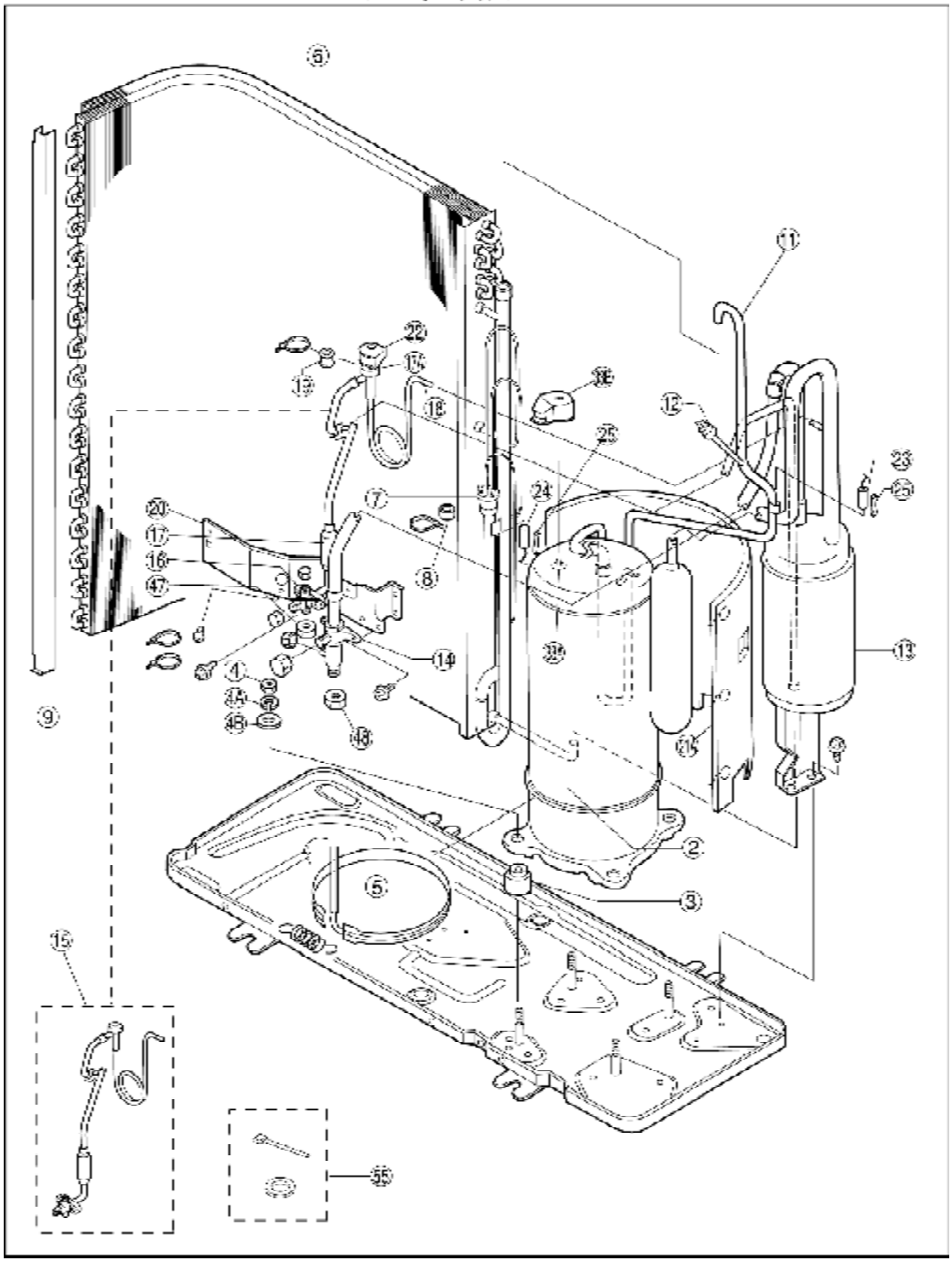
CU-A24BBP5, CU-C24BBP5, CU-A28BBP5, CU-A28BBP8, CU-C28BBP5, CU-C28BBP8



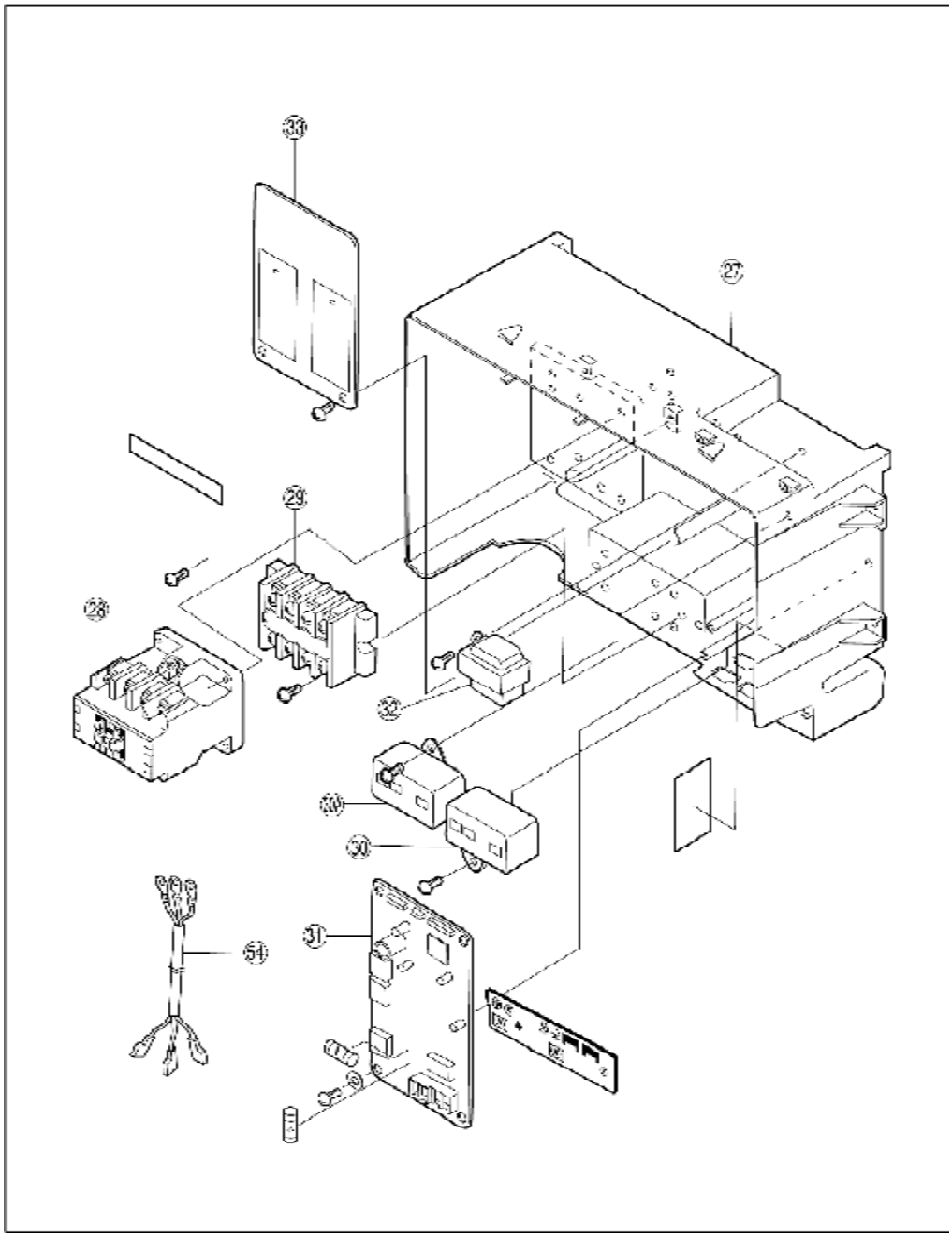
CU-A24BBP5, CU-A28BBP5, CU-A28BBP8 (Heat pump type)



CU-C24BBP5, CU-C28BBP5, CU-C26BBP8 (Cooling only type)



CU-A24BBP5, CU-C24BBP5, CU-A28BBP5, CU-A28BBP8, CU-C28BBP5, CU-C28BBP8



NO.	PART DESCRIPTION	QTY.	CU-A24BBP5	CU-A28BBP5	CU-A28BBP8
1	BASE PAN ASS'Y	1	CWD52K1038A	←	←
2	COMPRESSOR	1	NH41VNDT	NH44VNDT	NH44YDET
3	ANTI-VIBRATION BUSHING	4	CWH501018	←	←
4	NUT FOR COMP. MOUNT.	3	XNG8	←	←
4a	WASHER for COMPRESSOR	3	XWA8	←	←
4b	SP WASHER	3	CWH571018	←	←
5	CRANKCASE HEATER	1	CWA341005	←	←
6	CONDENSER COMPLETE	1	CWB32C1088	CWB32C1089	←
7	TUBE ASS'Y (CAPILLARY TUBE)	1	CWT07K1045	CWT07K1046	←
8	PIPE HOLDER RUBBER	1	CWG251016	←	←
9	CONDENSER SIDE PLATE	1	CWD911122	←	←
11	TUBE ASS'Y(PRESSURE SWITCH)	1	CWT022355	←	←
12	HIGH PRESSURE SWITCH	1	CWA101002	←	←
13	ACCUMULATOR	1	CWB131007A	CWB131008A	←
13a	4-WAYS VALVE COMPLETE	1	CWB00C1002	CWB00C1003	←
13b	TUBE ASS'Y(PRESS.SW + VALVE)	1	CWT01C2285	←	←
13c	HEATING PRESSURE SWITCH	1	CWA101001	←	←
13d	4-WAYS VALVE	1	CWB00003	←	←
15	TUBE ASS'Y(VALVE+STRAINER)	1	CWT01C2282	CWT01C2283	←
16	3-WAYS VALVE	1	CWB011054	CWB011053	←
17	STRAINER	1	CWB111006	CWB111005	←
17a	2-WAYS VALVE	1	CWB02299	←	←
18	CAPILLARY TUBE for VALVE	1	CWB15K1038	CWB15K1037	←
19	PIPE HOLDER RUBBER	1	CWG251014	CWG251015	←
20	HOLDER-SERVICE VALVE	1	CWD911124	←	←
21	SOUND-PROOF BOARD ASS'Y	1	CWH151016	←	←
21a	SOUND PROOF MATERIAL-COMP	1	CWG302098	←	←
22	V-COIL COMPLETE	1	CWA43C2068	←	←
22a	V-COIL COMPLETE (4 WAY VALVE)	1	CWA43C2060	←	←
23	PIPING SENSOR (DISCHARGE)	1	CWA501042	←	←
24	PIPING SENSOR (COIL)	1	CWA501043	←	←
25	SPRING FOR SENSOR	2	CWH711010	←	←
26	CABINET REAR PLATE	1	CWE02C1005	←	←
27	CONTROL BOARD	1	CWH141004	←	←
28	COMPRESSOR RELAY	1	CWA001005	←	CWA001007
29	TERMINAL BOARD ASS'Y	1	CWA28K1027	←	CWA28K1029
30	CAPACITOR-FAN MOTOR (3 / 460)	1	DS461305QP-A	←	←
30a	CAPACITOR-COMP (MF/V)	1	DS441456CPNB / (45 / 440)	DS441506CPNB / (50 / 440)	-
31	ELECTRONIC CONTROLLER	1	CWA742583	←	CWA742584

32	TRANSFORMER	1	CWA401029	←	←
33	CURRENT TRANSFORMER BOARD	1	CWA742591	←	CWA742592
33a	OVERLOAD PROTECTOR	1	-	-	CWA121075
33b	TERMINAL COVER	1	CWH171019	←	CWH171022
34	BRACKET FAN MOTOR	1	CWD541027	←	←
35	SCREW-BRACKET FAN MOTOR	4	CWH551040	←	←
36	FAN MOTOR	1	CWA951077	←	←
38	SCREW-FAN MOTOR	4	CWH55442	←	←
39	PROPELLER FAN	1	CWH001007	←	←
40	WASHER for P.FAN	1	CWH571013	←	←
41	SPRING WASHER for P.FAN	1	XWB10B	←	←
42	NUT for PROPELLER FAN	1	CWH56033	←	←
43	P.FAN AIR GUIDER PLATE	1	CWE061036A	←	←
44	FAN GUARD	1	CWD041014A	←	←
45	CONDENSER GUARD	1	CWD041015A	←	←
46	CABINET TOP PLATE COMPLETE	1	CWE03C1004	←	←
47	FLARE NUT (1/4") / (3/8")	1	6002140 (1/4")	CWT25005 (3/8")	←
48	FLARE NUT (5/8")	1	CWT25004	←	←
49	PIPE COVER (FRONT)	1	CWD601017A	←	←
50	PIPE COVER (BACK)	1	CWD601018A	←	←
51	CABINET FRONT PLATE	1	CWE06C1033	←	←
52	HANDLE	3	CWE161008	←	←
53	HANDLE	1	CWE161009	←	←
54	LEADWIRE-COMPRESSOR	1	CWA67C3657	←	CWA67C3665
55	ACCESSORY COMPLETE	1	CWH82C1105	←	←
	INSTALLATION INSTRUCTION	1	CWF612231	←	←

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NO.	PART DESCRIPTION	QTY.	CU-C24BBP5	CU-C28BBP5	CU-C28BBP8
1	BASE PAN ASS'Y	1	CWD52K1038A	←	←
2	COMPRESSOR	1	NH41VNDT	NH44VNDT	NH44YDET
3	ANTI-VIBRATION BUSHING	4	CWH501018	←	←
4	NUT FOR COMP. MOUNT.	3	XNG8	←	←
4a	WASHER for COMPRESSOR	3	XWA8	←	←
4b	SP WASHER	3	CWH571018	←	←
5	CRANKCASE HEATER	1	CWA341005	←	←
6	CONDENSER COMPLETE	1	CWB32C1091	←	←
7	TUBE ASS'Y (CAPILLARY TUBE)	1	CWT07K1024	←	←
8	PIPE HOLDER RUBBER	1	CWG251016	←	←
9	CONDENSER SIDE PLATE	1	CWD911122	←	←
11	TUBE ASS'Y(PRESSURE SWITCH)	1	CWT022364	←	←
12	HIGH PRESSURE SWITCH	1	CWA101002	←	←
13	ACCUMULATOR	1	CWB131007A	CWB131008A	←
14	TUBE ASS'Y(3 WAYS VALVE)	1	CWT022362	CWT022363	←
15	TUBE ASS'Y(VALVE+STRAINER)	1	CWT01C2282	CWT01C2283	←
16	3-WAYS VALVE	1	CWB011054	CWB011053	←
17	STRAINER	1	CWB111006	CWB111005	←
17a	2-WAYS VALVE	1	CWB02299	←	←
18	CAPILLARY TUBE for VALVE	1	CWB15K1038	CWB15K1037	←
19	PIPE HOLDER RUBBER	1	CWG251014	CWG251015	←
20	HOLDER-SERVICE VALVE	1	CWD911124	←	CWD911124
21	SOUND-PROOF BOARD ASS'Y	1	CWH151016	←	←
21a	SOUND PROOF MATERIAL-COMP	1	CWG302098	←	←
22	V-COIL COMPLETE	1	CWA43C2068	←	←
23	PIPING SENSOR (DISCHARGE)	1	CWA501042	←	←
24	PIPING SENSOR (COIL)	1	CWA501043	←	←
25	SPRING FOR SENSOR	2	CWH711010	←	←
26	CABINET REAR PLATE	1	CWE02C1005	←	←
27	CONTROL BOARD	1	CWH141004	←	←
28	COMPRESSOR RELAY	1	CWA001005	←	CWA001007
29	TERMINAL BOARD ASS'Y	1	CWA28K1027	←	CWA28K1029
30	CAPACITOR-FAN MOTOR (3 / 460)	1	DS461305QP-A	←	←
30a	CAPACITOR-COMP (MF/V)	1	DS441456CPNB / (45 / 370)	DS441506CPNB / (50 / 440)	-
31	ELECTRONIC CONTROLLER	1	CWA742587	←	CWA742588
32	TRANSFORMER	1	CWA401029	←	←
33	CURRENT TRANSFORMER BOARD	1	CWA742591	←	CWA742592
33a	OVERLOAD PROTECTOR	1	-	-	CWA121075
33b	TERMINAL COVER	1	CWH171019	←	CWH171022
34	BRACKET FAN MOTOR	1	CWD541027	←	←
35	SCREW-BRACKET FAN MOTOR	4	CWH551040	←	←

36	FAN MOTOR	1	CWA951077		
38	SCREW-FAN MOTOR	4	CWH55442		
39	PROPELLER FAN	1	CWH001007		
40	WASHER for P.FAN	1	CWH571013		
41	SPRING WASHER for P.FAN	1	XWB10B		
42	NUT for PROPELLER FAN	1	CWH56033		
43	P.FAN AIR GUIDER PLATE	1	CWE061036A		
44	FAN GUARD	1	CWD041014A		
45	CONDENSER GUARD	1	CWD041015A		
46	CABINET TOP PLATE COMPLETE	1	CWE03C1004		
47	FLARE NUT (1/4") / (3/8")	1	6002140 (1/4")	CWT25005 (3/8")	
48	FLARE NUT (5/8")	1	CWT25004		
49	PIPE COVER (FRONT)	1	CWD601017A		
50	PIPE COVER (BACK)	1	CWD601018A		
51	CABINET FRONT PLATE	1	CWE06C1033		
52	HANDLE	3	CWE161008		
53	HANDLE	1	CWE161009		
54	LEADWIRE-COMPRESSOR	1	CWA67C3657		CWA67C3665
55	ACCESSORY COMPLETE	1	CWH82C1105		
	INSTALLATION INSTRUCTION	1	CWF612231		

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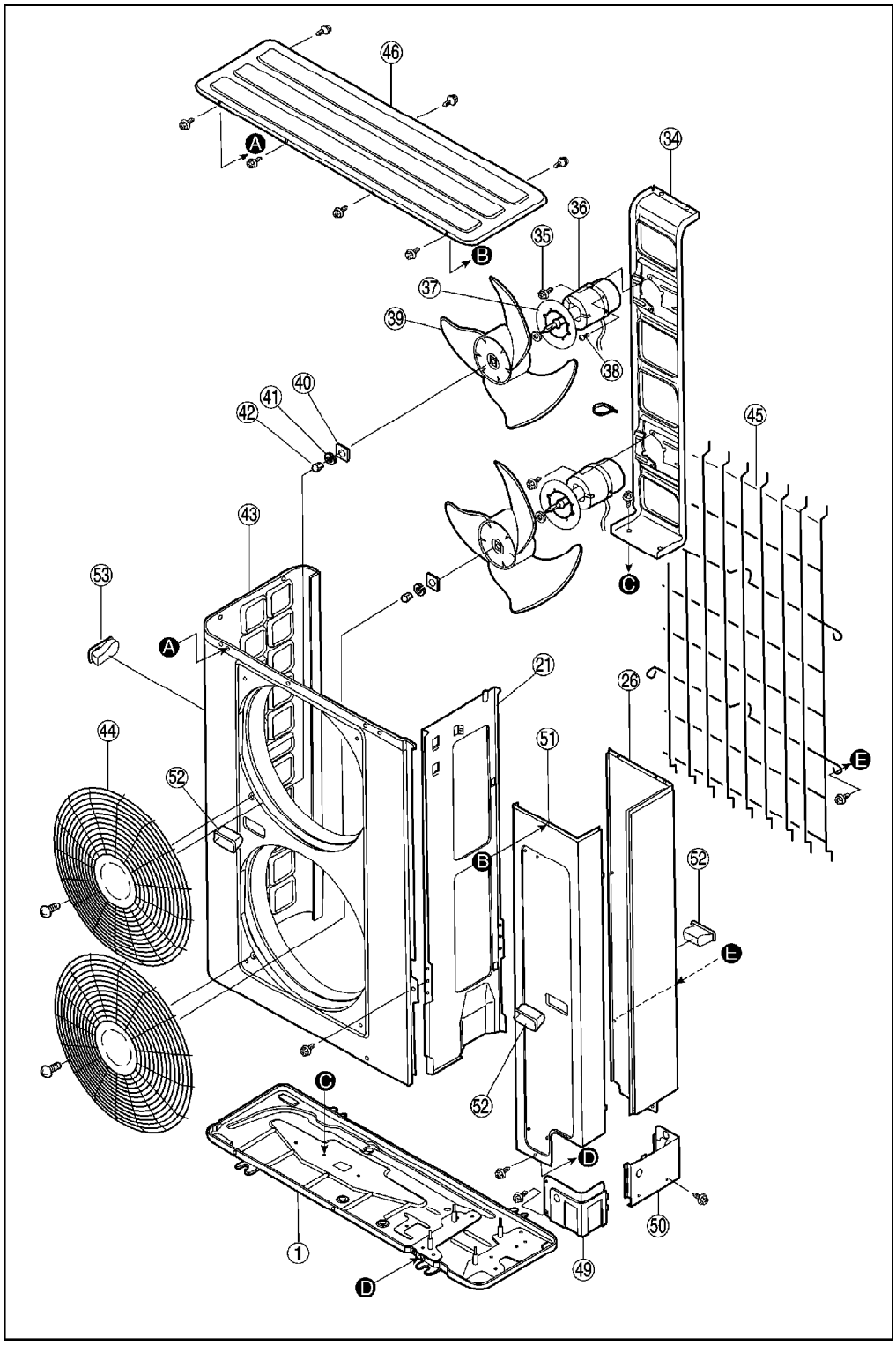
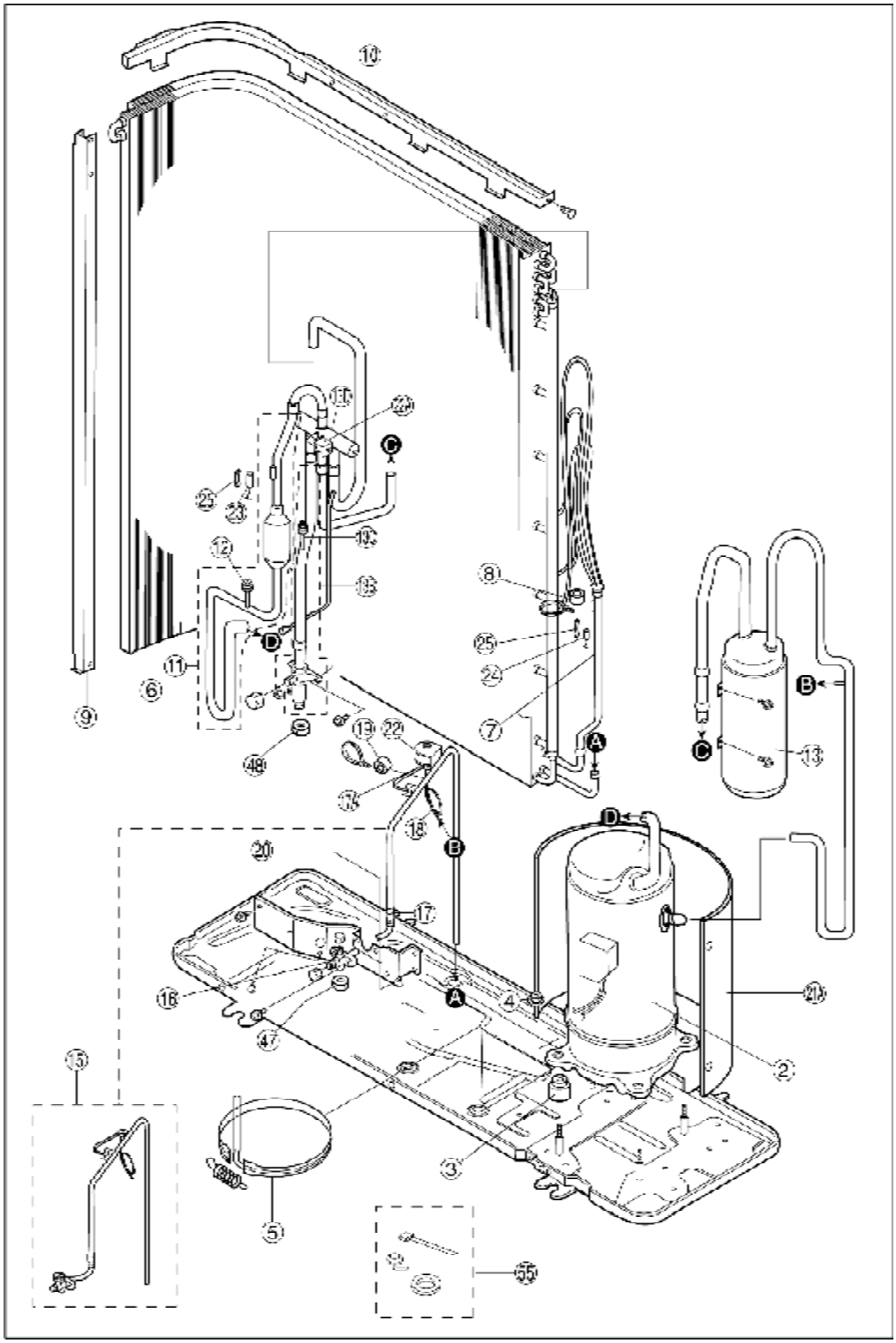
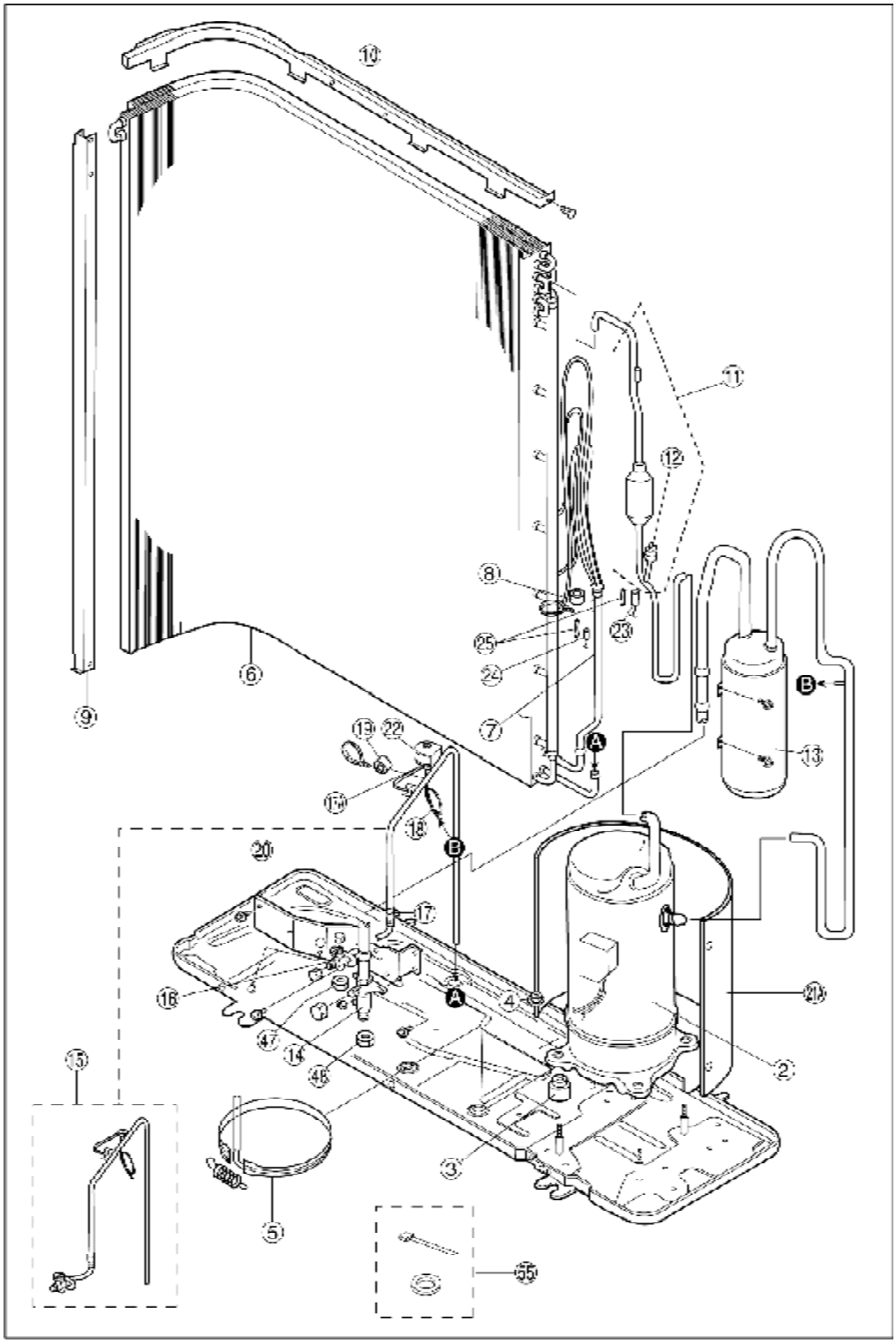
CU-A34BBP5, CU-A34BBP8, CU-C34BBP5, CU-C34BBP8, CU-A43BBP8, CU-C43BBP8,
CU-A50BBP8, CU-C50BBP8



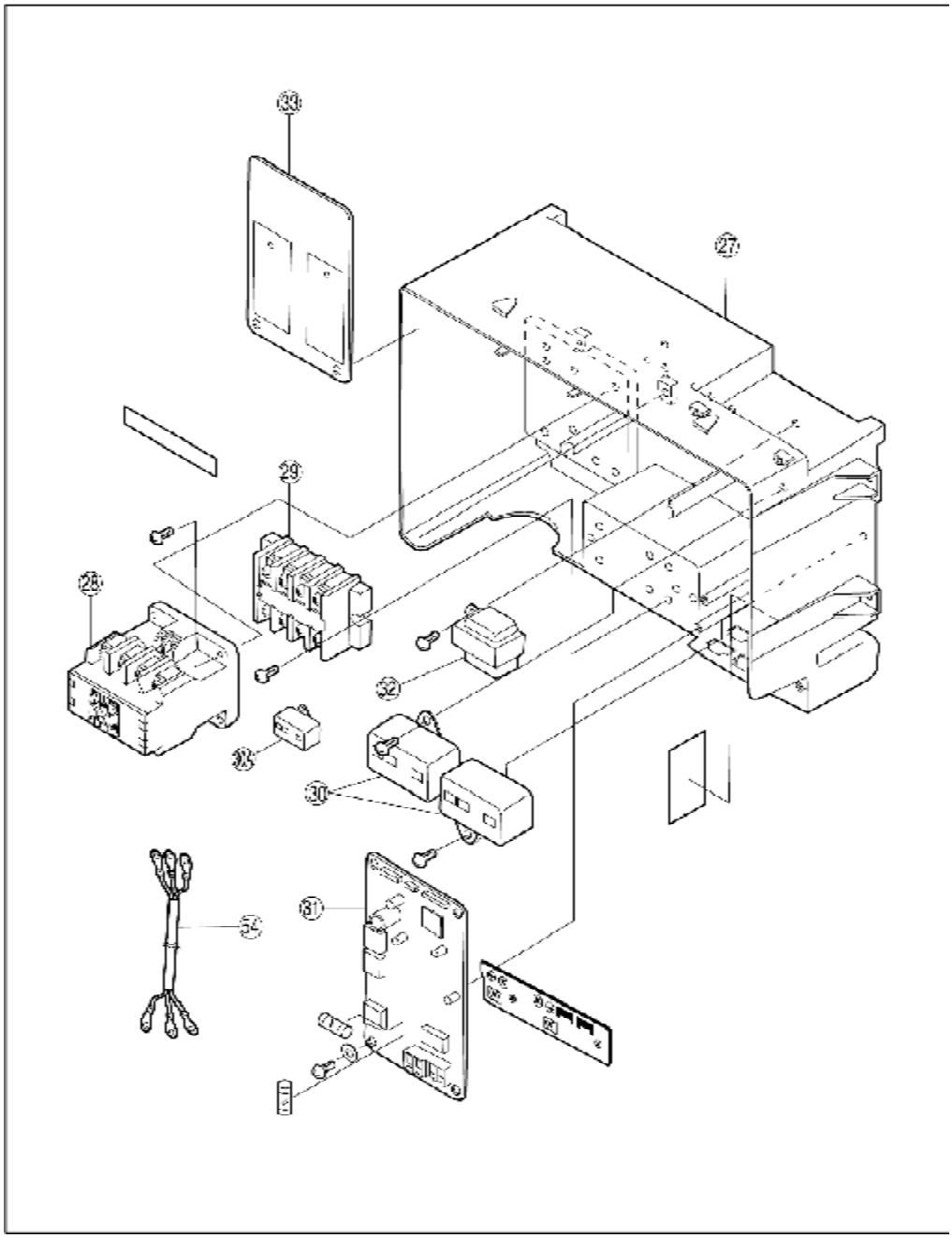
CU-A34BBP5, CU-A34BBP8, CU-A43BBP8, CU-A50BBP8 (Heat pump type)



CU-C34BBP5, CU-C34BBP8, CU-C43BBP8, CU-C50BBP8 (Cooling only type)



CU-A34BBP5, CU-A34BBP8, CU-C34BBP5, CU-C34BBP8, CU-A43BBP8, CU-C43BBP8,
CU-A50BBP8, CU-C50BBP8



NO.	PART DESCRIPTION	QTY.	CU-A34BBP5	CU-A34BBP8	CU-A43BBP8	CU-A50BBP8
1	BASE PAN ASS'Y	1	CWD52K1039A	〃	CWD52K1040A	〃
2	COMPRESSOR	1	ZR47K3PFJ522	ZR45KCTFD522	ZR57KCTFD599	ZR68KCTFD599
3	ANTI-VIBRATION BUSHING	4	CWH501020	〃	〃	〃
4	NUT FOR COMP. MOUNT.	3	4582065	〃	〃	〃
5	CRANKCASE HEATER	1	CWA341004	〃	CWA341002	〃
6	CONDENSER COMPLETE	1	CWB32C1094	〃	CWB32C1095	CWB32C1096
7	TUBE ASS'Y (CAPILLARY TUBE)	1	CWT07K1023	〃	CWT07K1048	CWT07K1049
8	PIPE HOLDER RUBBER	1	CWG251016	〃	CWG251021	〃
9	CONDENSER SIDE PLATE	1	CWD911123	〃	〃	〃
10	CONDENSER TOP PLATE	1	CWD911132	〃	CWD911133	〃
11	TUBE ASS'Y(PRESSURE SWITCH)	1	CWT022371	〃	CWT022374	〃
12	HIGH PRESSURE SWITCH	1	CWA101002	〃	〃	〃
13	ACCUMULATOR	1	CWB131009A	〃	CWB131011A	CWB131012A
13b	TUBE ASS'Y(PRESS.SW + VALVE)	1	CWT022370	〃	CWT022373	〃
13c	HEATING PRESSURE SWITCH		CWA101001	〃	〃	〃
13d	4-WAYS VALVE	1	CWB001014	〃	CWB001015	〃
15	TUBE ASS'Y(VALVE+STRAINER)	1	CWT022359	〃	CWT022360	CWT022361
16	3-WAYS VALVE		CWB011058	〃	〃	〃
17	STRAINER		CWB111005	〃	〃	〃
17a	2-WAYS VALVE		CWB02299	〃	〃	〃
18	CAPILLARY TUBE for VALVE	1	CWB15K1037	〃	CWB15K1039	CWB15K1040
19	PIPE HOLDER RUBBER	1	CWG251015	〃	〃	〃
20	HOLDER-SERVICE VALVE	1	CWD911131	〃	〃	〃
21	SOUND-PROOF BOARD ASS'Y	1	CWH15K1001	〃	〃	〃
21a	SOUND PROOF MATERIAL-COMP.	1	CWG302101	〃	CWG302103	〃
22	V-COIL COMPLETE	1	CWA43C2067	〃	〃	〃
22a	V-COIL COMPLETE-4 WAY VALVE	1	CWA43C2063	〃	〃	〃
23	PIPING SENSOR (DISCHARGE)	1	CWA501044	〃	〃	〃
24	PIPING SENSOR (COIL)	1	CWA501045	〃	〃	〃
25	SPRING FOR SENSOR	2	CWH711010	〃	〃	〃
26	CABINET REAR PLATE	1	CWE021012A	〃	CWE02C1006	〃
27	CONTROL BOARD	1	CWH141004	〃	〃	〃
28	COMPRESSOR RELAY	1	CWA001006	CWA001005	〃	〃
29	TERMINAL BOARD ASS'Y	1	CWA28K1027	CWA28K1029	〃	〃
30	CAPACITOR-FAN MOTOR (3 / 460)	2	DS461305QP-A	〃	〃	〃
30a	CAPACITOR-COMP (MF/V)	1	DS371606CPNA (60 / 370)	-	-	-
31	ELECTRONIC CONTROLLER	1	CWA742590	CWA742585	〃	〃
32	TRANSFORMER	1	CWA401029	〃	〃	〃
33	CURRENT TRANSFORMER BOARD	1	CWA742591	CWA742592	〃	〃
34	BRACKET-FAN MOTOR	1	CWD541028	〃	〃	〃

35	SCREW-BRACKET FAN MOTOR	4	CWH551040	←	←	←
36	FAN MOTOR	2	CWA951077	←	←	CWA951078
37	FAN MOTOR SUPPORTER	2	-	←	←	CWD932142
38	SCREW-FAN MOTOR	8	CWH55442	←	←	←
39	PROPELLER FAN	2	CWH001007	←	←	←
40	WASHER for P.FAN	2	CWH571013	←	←	←
41	SPRING WASHER for P.FAN	2	XWB10B	←	←	←
42	NUT for PROPELLER FAN	2	CWH56033	←	←	←
43	P.FAN AIR GUIDER PLATE	1	CWE061042A	←	CWE061044A	←
44	FAN GUARD	2	CWD041014A	←	←	←
45	CONDENSER GUARD	1	CWD041016A	←	CWD041017A	←
46	CABINET TOP PLATE COMPLETE	1	CWE03C1004	←	CWE03C1005	←
47	FLARE NUT (3/8")	1	CWT25005	←	←	←
48	FLARE NUT (6/8")	1	CWT251012	←	←	←
49	PIPE COVER (FRONT)	1	CWD601017A	←	←	←
50	PIPE COVER (BACK)	1	CWD601018A	←	←	←
51	CABINET FRONT PLATE	1	CWE061046A	←	←	←
52	HANDLE	3	CWE161008	←	←	←
53	HANDLE	1	CWE161009	←	←	←
54	LEADWIRE-COMPRESSOR	1	CWA67C3876	CWA67C3656	←	←
55	ACCESSORY COMPLETE	1	CWH82C1105	←	←	←
	INSTALLATION INSTRUCTION	1	CWF612231	←	←	←

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NO.	PART DESCRIPTION	QTY.	CU-C34BBP5	CU-C34BBP8	CU-C43BBP8	CU-C50BBP8
1	BASE PAN ASS'Y	1	CWD52K1039A	←	CWD52K1040A	←
2	COMPRESSOR	1	ZR47K3PFJ522	ZR45KCTFD522	ZR57KCTFD599	ZR68KCTFD599
3	ANTI-VIBRATION BUSHING	4	CWH501020	←	←	←
4	NUT FOR COMP. MOUNT.	3	CW4582065	←	←	←
5	CRANKCASE HEATER	1	CWA341004	←	CWA341002	←
6	CONDENSER COMPLETE	1	CWB32C1093	←	CWB32C1097	←
7	TUBE ASS'Y (CAPILLARY TUBE)	1	CWT07K1025	←	CWT07K1021	←
8	PIPE HOLDER RUBBER	1	CWG251016	←	CWG251021	←
8	PIPE HOLDER RUBBER	1	CWG251015	←	←	←
9	CONDENSER SIDE PLATE	1	CWD911123	←	←	←
10	CONDENSER TOP PLATE	1	CWD911132	←	CWD911133	←
11	TUBE ASS'Y (PRESSURE SW+RCVR)	1	CWT022366	←	CWT022377	←
12	HIGH PRESSURE SWITCH	1	CWA101002	←	←	←
13	ACCUMULATOR	1	CWB131009A	←	CWB131011A	CWB131012A
14	TUBE ASS'Y (3 WAY VALVE-GAS)	1	CWT022365	←	CWT022367	CWT022368
15	TUBE ASS'Y(VALVE+STRAINER)	1	CWT022359	←	CWT022360	CWT022361

16	3-WAYS VALVE	1	CWB011058	←	←	←
17	STRAINER	1	CWB111005	←	←	←
17a	2-WAYS VALVE	1	CWB02299	←	←	←
18	CAPILLARY TUBE for VALVE	1	CWB15K1037	←	CWB15K1039	CWB15K1040
19	PIPE HOLDER RUBBER	1	CWG251015	←	←	←
20	HOLDER-SERVICE VALVE	1	-	-	-	CWD911131
21	SOUND-PROOF BOARD ASS'Y	1	CWH15K1001	←	←	←
21a	SOUND PROOF MATERIAL-COMP.	1	CWG302101	←	CWG302103	←
22	V-COIL COMPLETE	1	CWA43C2067	CWA43C2067	CWA43C2067	CWA43C2067
23	PIPING SENSOR (DISCHARGE)	1	CWA501044	←	←	←
24	PIPING SENSOR (COIL)	1	CWA501045	←	←	←
25	SPRING FOR SENSOR	2	CWH711010	←	←	←
26	CABINET REAR PLATE	1	CWE021012A	←	←	←
27	CONTROL BOARD	1	CWH141004	←	←	←
28	COMPRESSOR RELAY	1	CWA001006	CWA001005	CWA001005	CWA001005
29	TERMINAL BOARD ASS'Y	1	CWA28K1027	CWA28K1029	CWA28K1029	CWA28K1029
30	CAPACITOR-FAN MOTOR (3 / 460)	2	DS461305QP-A	←	←	←
30a	CAPACITOR-COMP (MF/V)	1	DS371606CPNA / (60 / 370)	-	-	-
31	ELECTRONIC CONTROLLER	1	CWA742589	CWA742586	←	←
32	TRANSFORMER	1	CWA401029	←	←	←
33	CURRENT TRANSFORMER BOARD	1	CWA742591	CWA742592	CWA742592	CWA742592
34	BRACKET FAN MOTOR	1	CWD541028	←	←	←
35	SCREW-BRACKET FAN MOTOR	4	CWH551040	←	←	←
36	FAN MOTOR	2	CWA951077	←	←	CWA951078
37	FAN MOTOR SUPPORTER	2	-	-	-	CWD932142
38	SCREW-FAN MOTOR	8	CWH55442	←	←	←
39	PROPELLER FAN	2	CWH001007	←	←	←
40	WASHER for P.FAN	2	CWH571013	←	←	←
41	SPRING WASHER for P.FAN	2	XWB10B	←	←	←
42	NUT for PROPELLER FAN	2	CWH56033	←	←	←
43	P.FAN AIR GUIDER PLATE	1	CWE061042A	←	CWE061044A	←
44	FAN GUARD	2	CWD041014A	←	←	←
45	CONDENSER GUARD	1	CWD041016A	←	CWD041017A	←
46	CABINET TOP PLATE COMPLETE	1	CWE03C1004	←	CWE03C1005	←
47	FLARE NUT (3/8")	1	CWT25005	←	←	←
48	FLARE NUT (6/8")	1	CWT251012	←	←	←
49	PIPE COVER (FRONT)	1	CWD601017A	←	←	←
50	PIPE COVER (BACK)	1	CWD601018A	←	←	←
51	CABINET FRONT PLATE	1	CWE061046A	←	←	←
52	HANDLE	3	CWE161008	←	←	←
53	HANDLE	1	CWE161009	←	←	←
54	LEADWIRE-COMPRESSOR	1	CWA67C3876	CWA67C3656	CWA67C3656	CWA67C3656

55	ACCESSORY COMPLETE	1	CWH82C1105			
	INSTALLATION INSTRUCTION	1	CWF612231			

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